

COCORAHS – 25 Years A Retrospective



YMCA of the Rockies – May 2017



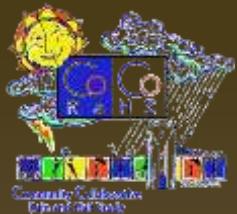
NATIONAL
MESONET



Colorado
State
University

CoCoRaHS over 25 years

Early Years



1997
 - Fort Collins Flood
 - CoCoRaHS begins
 - NSF Funding begins
 - Website
 - New Logo

Expansion

CoCoRaHS CANADA COMING SOON!

- Five for CoCo Fundraising begins
 - PRISM funding begins
 - WERA conferences begin
 - NOAA Funding for
 expansion

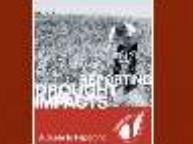


- Now in 50 states
 - PRISM funding begins
 - WERA conferences begin
 - NOAA Funding for
 expansion



2010

International and New Measurements



OVER 50 MILLION OBSERVATIONS
 ...Submitted by CoCo observers' WOW! 50M



2018

2023

- Data Dashboard
 - Expansion to Guam
 - Interactive Mapping System
 - 50 Million observations
 - Drought/Condition Monitoring
 - Educational Animations
 - Mobile Apps
 - White House
 - Vegetable Garden
 - ET measurements
 - International Expansion
 - WxTalk Webinars

Pre-CoCoRaHS



THE VERY BEGINNING



EARLY VOLUNTEERS

THE 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 city roads and bridges; \$1 million to city parks and trails; no estimate for private property.

Source: Emergency Officials
All information as of 7 a.m. today

July 30th
1997



THE ACTUAL BEGINNING

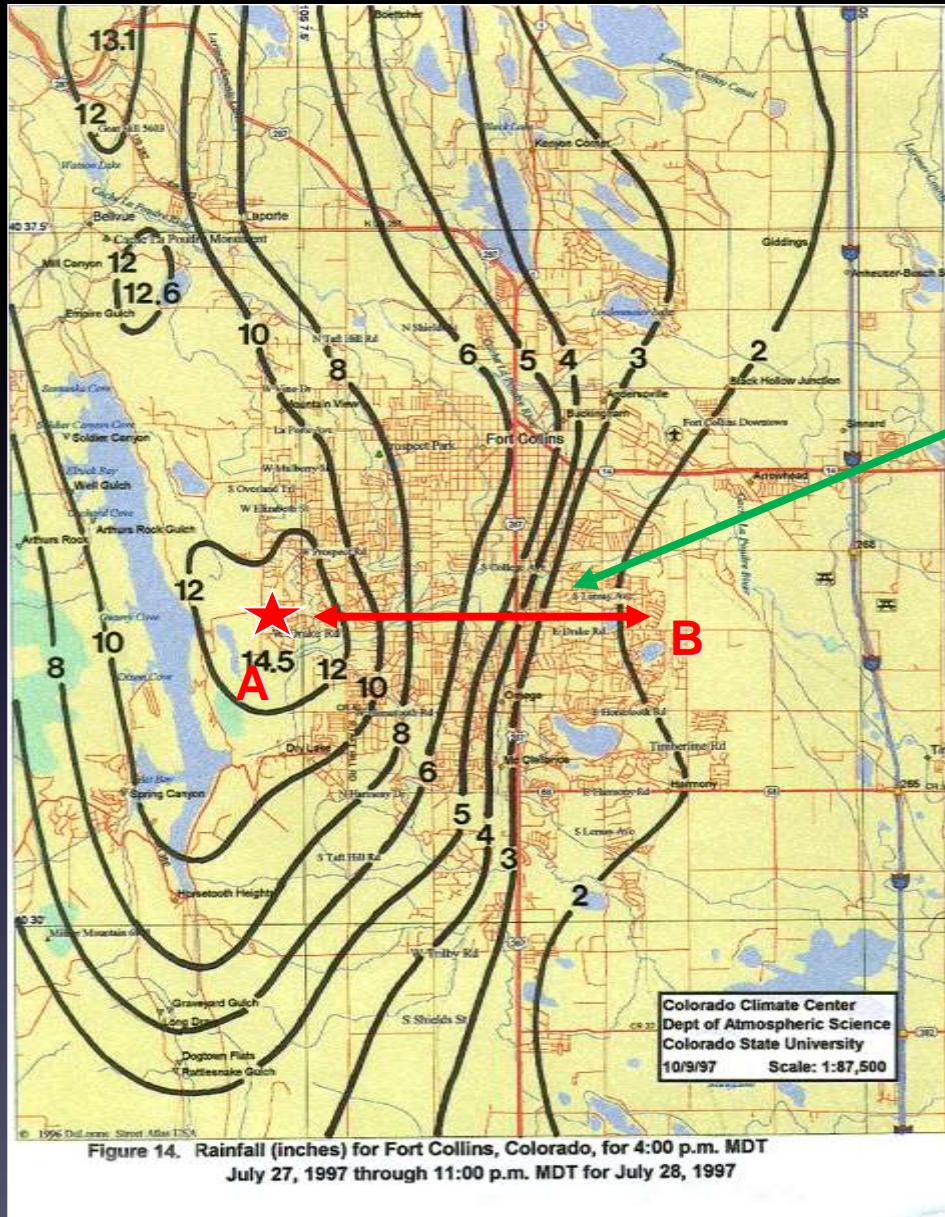
CoCoRaHS was born in response to the 1997 Fort Collins, Colorado Flood



July 30th
1997



The 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

1998



A few dozen volunteers
in Northern Colorado

2005



2,000+ volunteer observers
in communities across six states.

Today



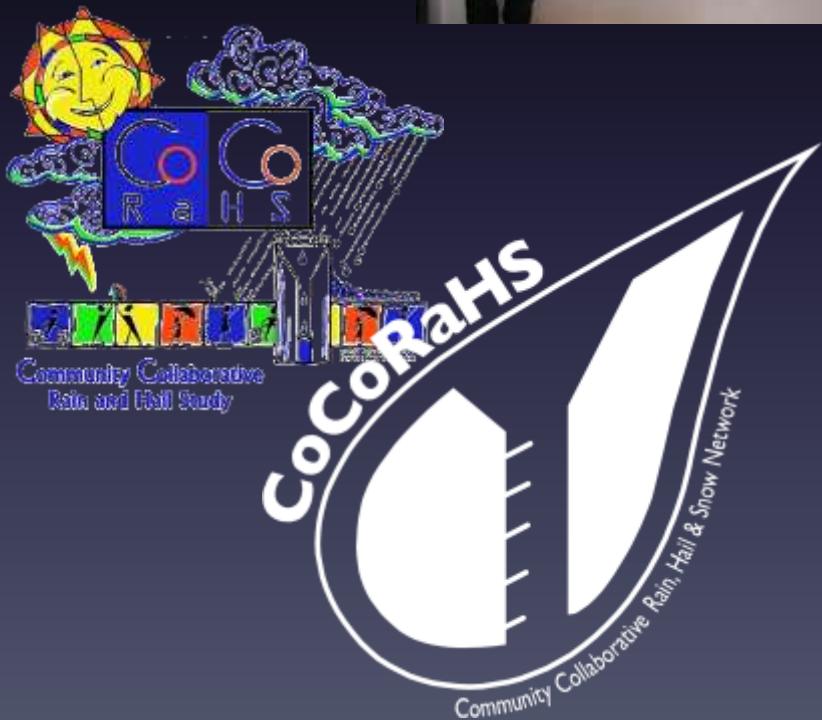
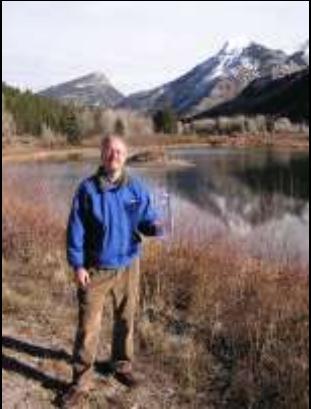
25,700+ volunteers in all
50 states, Canada, Puerto Rico,
the U.S. Virgin Islands,
the Bahamas and Guam

OVER 50 MILLION OBSERVATIONS
... submitted by CoCo observers! WOW!

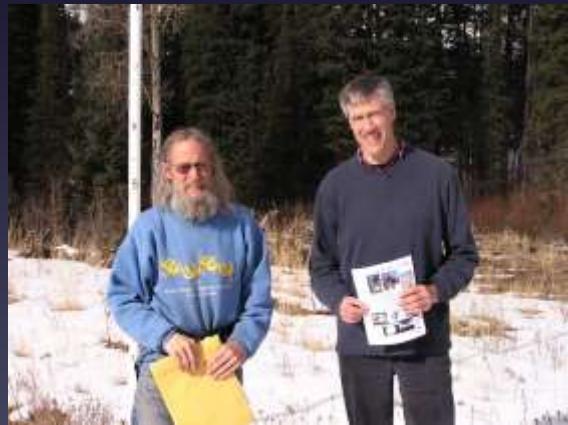
50M
April 2020

Over 5 Million+
observations per year

1998- 2004



| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | Total |
|----|------|-----|-----|-----|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| 5 | 0.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 0.0 | 0.1 | 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 0.0 | 0.1 | 0.5 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 0.0 | 1.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 1.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 1.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | 0.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



THE EARLY YEARS

The Beginning – Summer 1998

CoCo RaHS Weather Station Index
Summer 1998

Station Number: 352 *change to 23 f w co 6/4/98 AM*
Station Name: FCL 2 NW *changed*
(descriptive name will be assigned by CoCo RaHS staff, e.g. FCL 3N, WEL 3SSE, LOV 2NW)

Station Location:
Street Address: 2232 Sun Rose Way
Fort Collins, Co 80521

Additional descriptive information (if necessary):

Latitude* _____ Longitude* _____ Elevation* _____
(* will be determined by CoCo RaHS staff)

Primary Observer:
(responsible for rain gauge) _____
(required) _____

Assistant Observers:
Leah E. M. ns.co.us

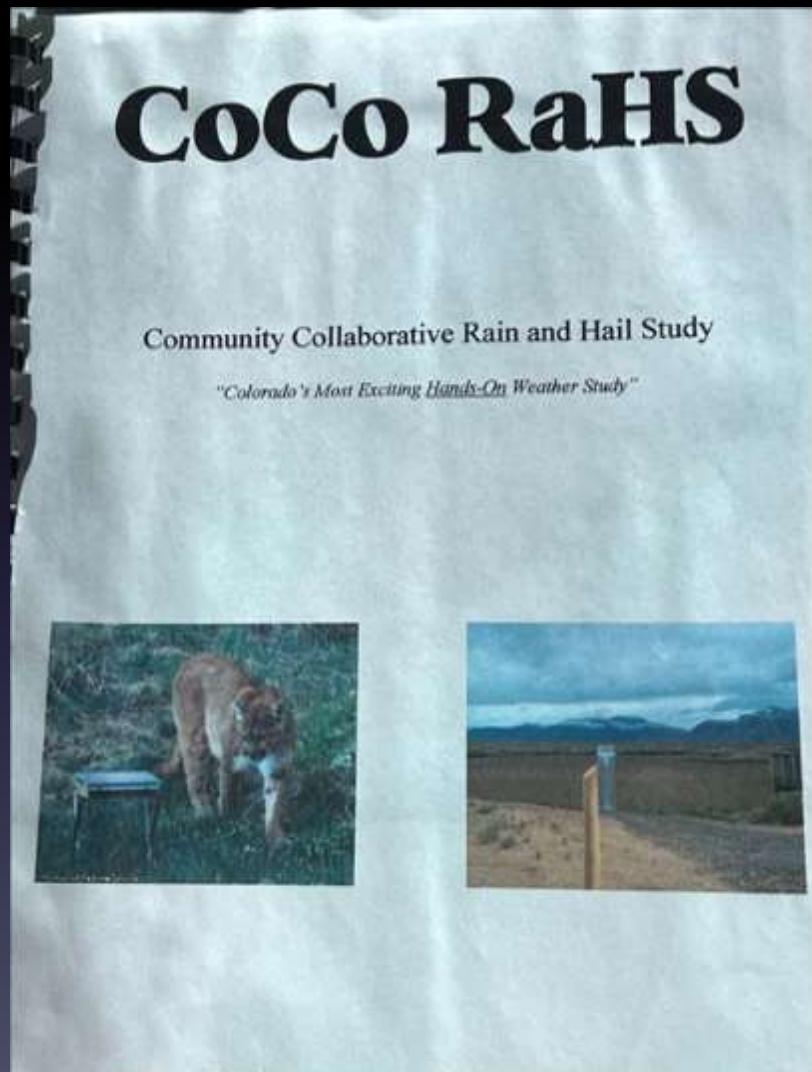
Raingauge will be read and emptied daily at: 7 a.m.
NOTE: Observation time of 7 a.m. is recommended by CoCo RaHS staff

Type of Rain Gauge: 4" plastic
Provided by CoCo RaHS, owner, other

Hail Pad Stand provided by CoCo RaHS, owner, other

Effective date: 6/3/98

Very good closure – ongoing



Observation forms

All Weather Rain Gauge
 (Hole Squirt)

NAME:

DATE: 2001
 OBS. TIME: 1400
 SECTION:
 RANGE:
 YEAR:

COUNTY:
 TOWNSHIP:

Remarks - Seven Weather - Storm Details

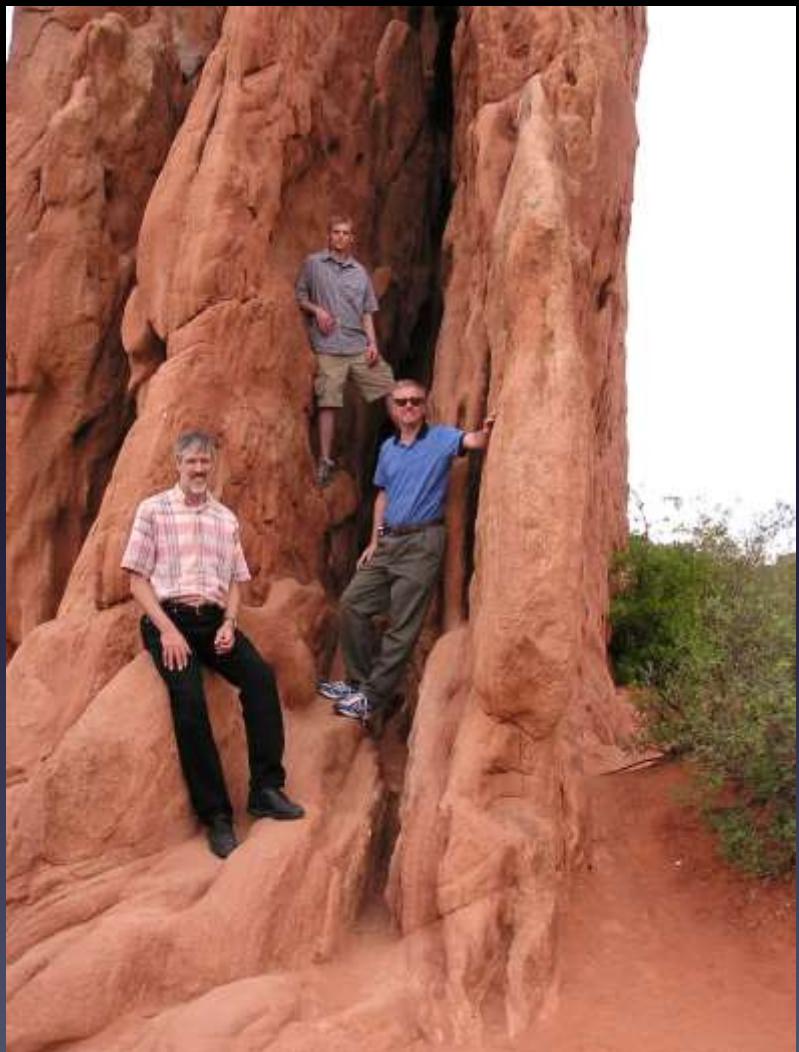
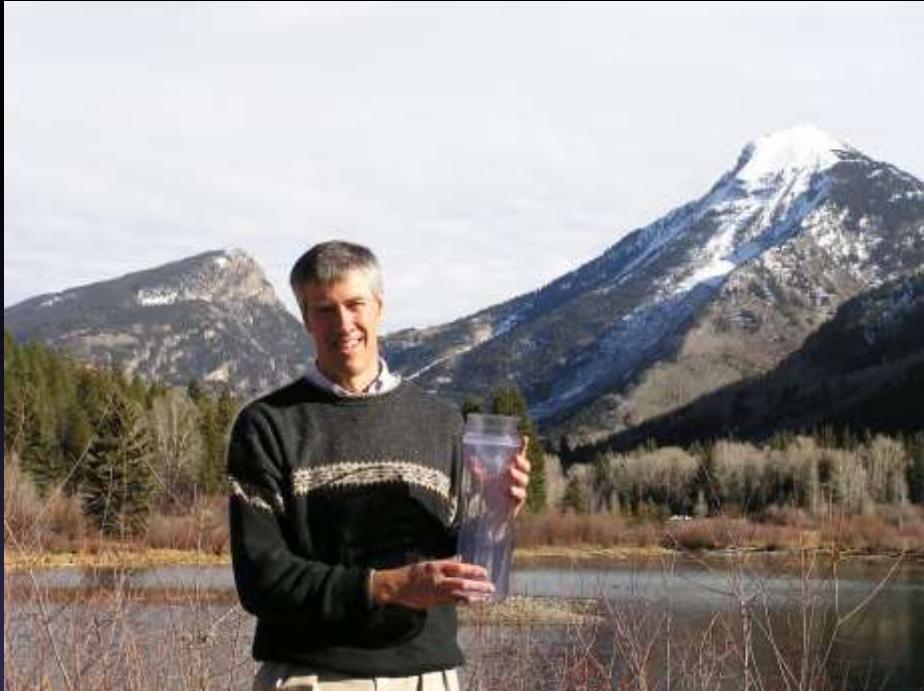
| | Jan | Feb | Mar | Apr | May | June |
|-------|------|-----|-----|-----|-----|------|
| 1 | | | | | | |
| 2 | | | | | | |
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| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | |
| 30 | | | | | | |
| Total | 3.51 | | | | | |

Interpretations: 1.5" May 16 1.13" 4.7" 5.4" 5.55" Spring 2001

1. Try to record precipitation each day at the same time.
 2. Record precipitation to the nearest 0.01" of an inch (0.01, 0.1, 0.21 etc.)
 3. If precipitation is less than .01", record "T" for trace.
 4. Use the remarks column to list any unusual or severe weather. (Expt. Jan. 2 Blizzard - snow packed for 2 days!)

| | | | | | | | |
|-------|------|-----|------|-------|-----|-------|--------|
| 5 | 0.01 | 1 | 0 | 9 | 0 | T | 0 |
| 6 | 0 | T | 1 | 0 | 0 | 0.01 | 0.03 T |
| 7 | 0 | 0 | 0 | 10.56 | 0 | 0.71 | 0.71 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0.33 | 0.48 |
| 9 | 0.10 | .02 | 1 | 0 | 0 | 0.28 | 0.0 |
| 10 | 0 | 1 | 0 | 0 | 0 | 0.004 | 0 |
| 11 | 0/0 | 0 | 0 | 0 | 0 | 1.14 | 0.02 |
| 12 | T | 0 | 0 | 0 | 0/0 | 0 | 0.02 |
| 13 | 0 | 0 | 0 | 0 | 38 | 0 | 0 |
| 14 | T | 0 | 0 | 1 | 0 | 0.001 | 0 |
| 15 | 0/0 | 0/0 | 0/0 | 0 | 0 | 0/0 | 0 |
| 16 | 0 | 0 | 1 | 0 | 0 | 0.001 | 0/0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0 |
| 18 | 0/0 | 0 | 0 | 0 | 0 | 0 | 0.012 |
| 19 | 0 | 0 | 0 | 0 | 0/0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | T | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0.31 | 0/T |
| 22 | 0 | 0 | 0 | 0.02 | 0 | 0.02 | 0 |
| 23 | 0.15 | T | 0 | 0 | 0 | 0.17 | 0.06 |
| 24 | 0 | 0 | 0 | 1.02 | 0 | 0.13 | 0 |
| 25 | 0/0 | 0 | 0.10 | 0 | 0 | 0.05 | 0.11/0 |
| 26 | 0 | 0 | 0.04 | 0 | 0 | 0 | 0 |
| 27 | 0 | 0 | 0 | 0 | + | 0 | 0.006 |
| 28 | 0 | 0 | 0.03 | 0 | 0 | 0 | 0 |
| 29 | 0/0 | 0 | 0 | 0 | T | 0 | 0 |
| 30 | 0.02 | 0 | 0 | 0 | 0 | 0.10 | 0/0 |
| 31 | 0.67 | T | 0.01 | 0 | 0 | 0.02 | 0 |
| Total | | | | | | | |

Things ramp up in late 2004 as we decide to go national with 2 years of NSF funding



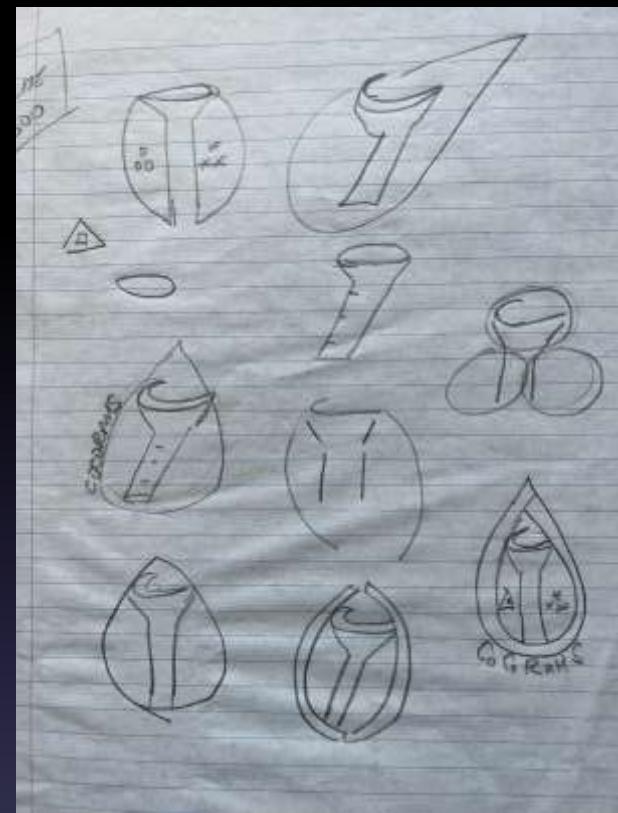
Name change

Colorado Rain and Hail Study (1998)

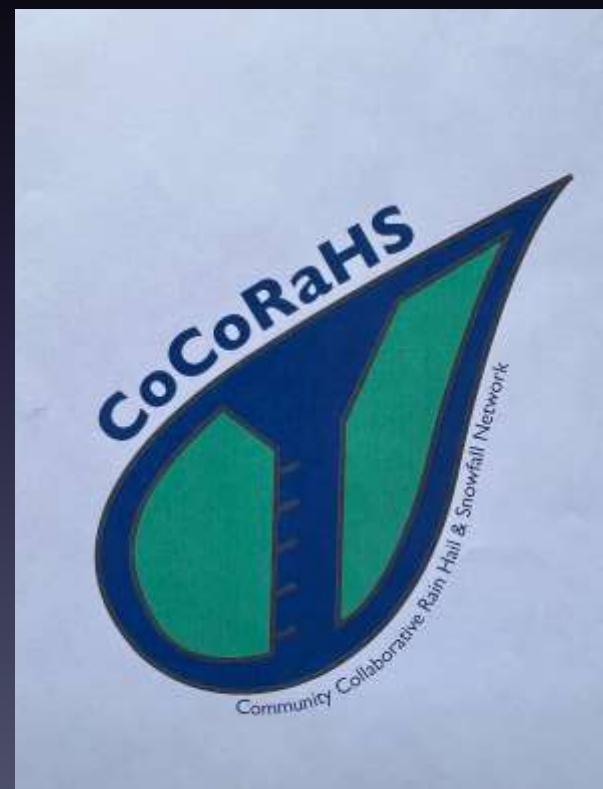
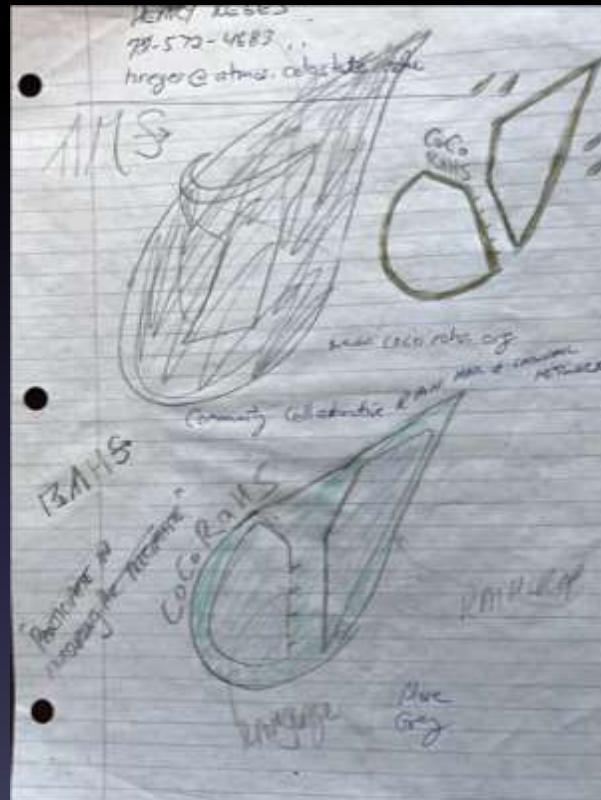
Community Collaborative Rain and Hail Study

Community Collaborative Rain , Hail and Snow Network
CoCoRaHS (2004)

New Logo - 2004



Henry's sketches



2005- 2009



COWS GIVING POWDERED MILK?

CoCoRaHS Drought Impacts

Report how drought is impacting you when you report your daily CoCoRaHS observation

CoCoRaHS March Madness 2008

March 1-31, 2008

HOW MANY NEW VOLUNTEERS CAN YOU RECRUIT IN YOUR STATE!



US EXPANSION



Youngsters with ambition

Nolan



Henry



Julian

Noah



A new website and maps

January 2005

CoCoRaHS - Community Collaborative Rain, Hail & Snow Network - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Options

Address <http://www.cocorahs.org/default.aspx>

Google Search web 12 blocked Options

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

Feedback Home Help View Data Help My Profile Admin Logout

Main Menu

- Home
- Join CoCoRaHS
- Get Started
- To the Dashboard



Would you like your state to be a part of the CoCoRaHS Network? Contact us at info@cocorahs.org.

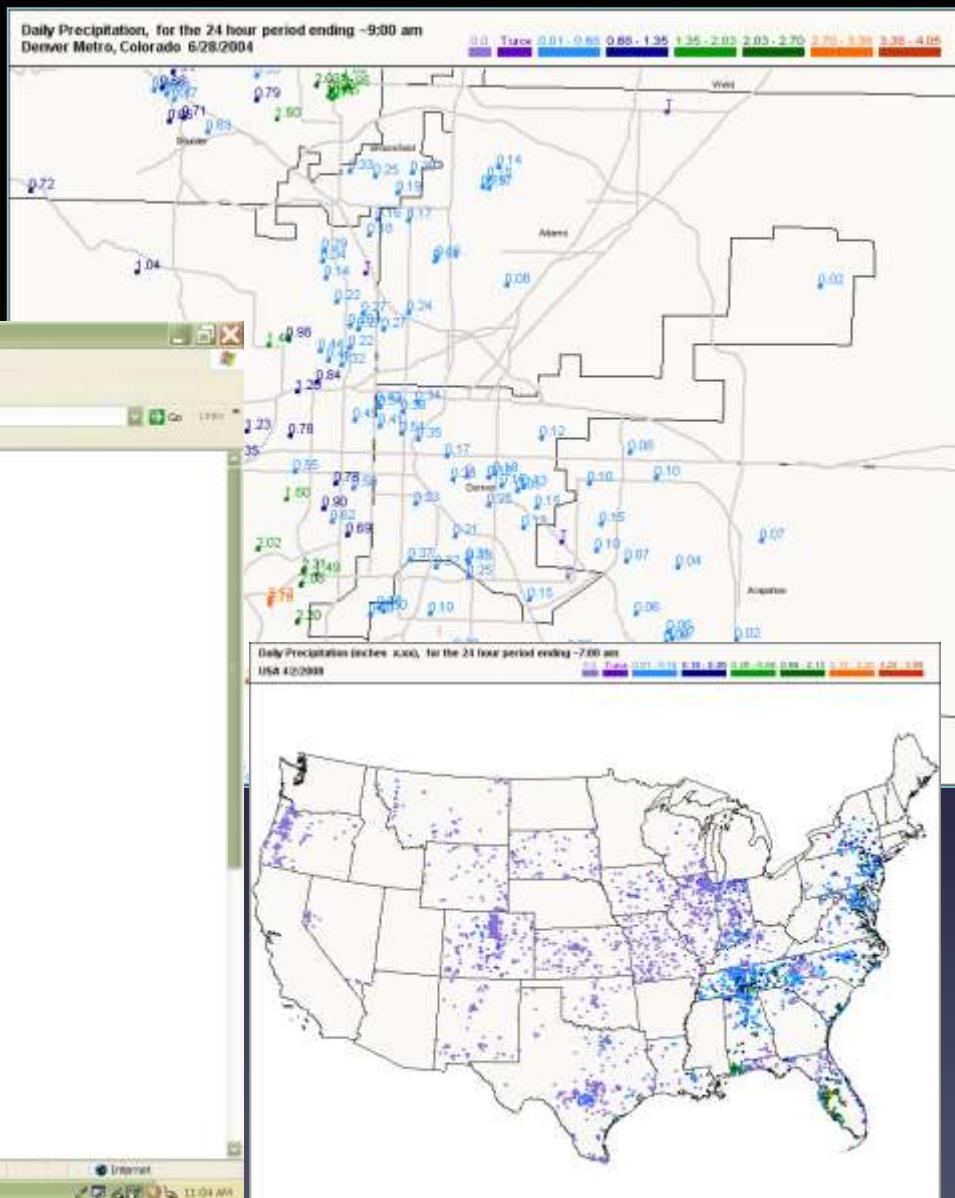
Welcome!

CoCoRaHS is a grassroots volunteer network of backyard weather observers of all ages who help scientists study the fascinating and very complex patterns of precipitation in the United States. The only requirements are an enthusiasm for watching and reporting weather conditions and a desire to learn more about the power and beauty of our natural world!



Our web page provides the ability for our observers to see their observations mapped out in "real time" as well as provide a wealth of

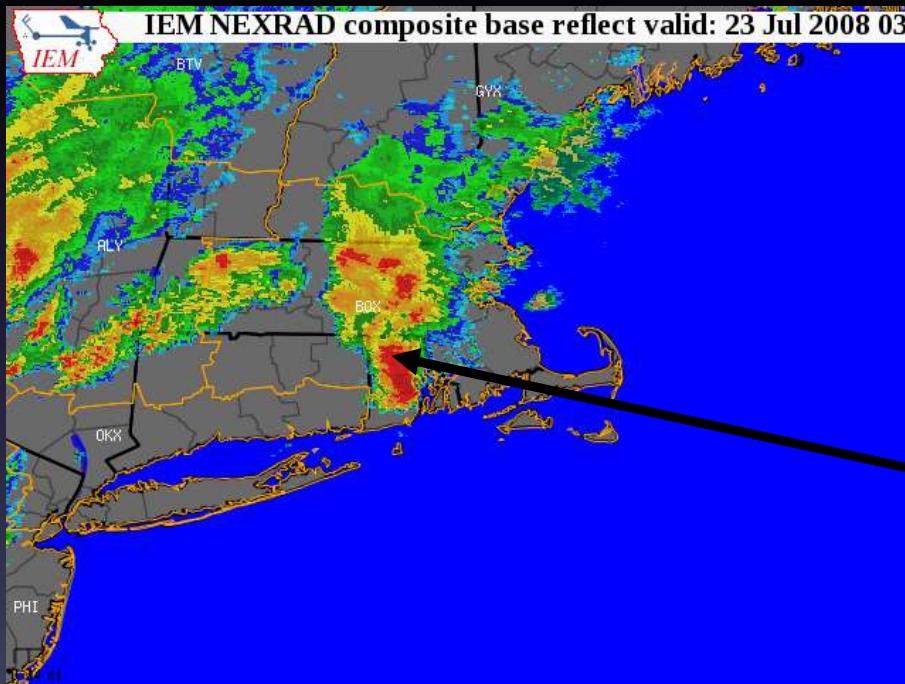
Internet 11:04 AM



Addition of CoCoRaHS Significant Weather & Hail Reports

Advanced warning to the National Weather Service regarding potential flash flooding

Sends an immediate alarm to NWS AWIPS workstations



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 |

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, MA

The Snow Swatter invented 2005

After a visit to the Colorado Farm Show in January



Snow measurements emphasized

The Catch and “Farm Stories” begin January 2005

The Catch

DRY WEATHER AGAIN—SO COME TO THE FARM SHOW

FORT COLLINS, CO -- Saturday, January 22, 2005

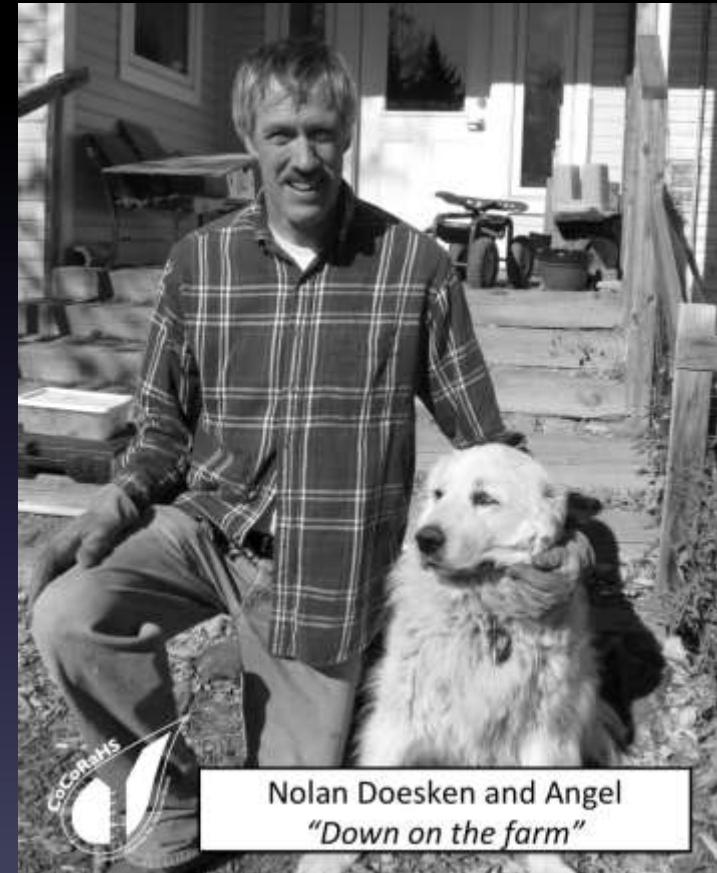
CoCoRaisins:

Recent weather update

What a week—four days in the 60s here in Fort Collins here in mid January and one was mightily close to 70. I guess this is what we call the "January Thaw". The ice had finally gotten good for skating on the local lakes, and now it's slush and open water again. Skiers report some slushy conditions on the slopes—especially down by the bases. It's a little early for spring, but the January thaw has felt pretty good this week.

Long range forecasts look like there will be a couple of opportunities for mountain snows before the end of the month. But for now enjoy the good roads and easy travel for I'm sure winter is far from over.

A few of you in SW Colorado sent some photos of what things looked like during and after your giant storm last week. We saw head-high and higher snows in a few areas—it was more like 10-15 feet deep down by Wolf Creek Pass. Very impressive.



A book deal by 2028?

Hail Pad Making Parties/Analysis



We ramped up our hail pad production and analysis and became one of the largest repositories of hail data in the United States.

HAIL PAD SATURDAY

May 8, 2010

9AM -
NOON



Ft.
Collins
Museum



Working with NASA on Hail



John Lane - NASA

Getting the word out in the mid 2000's



Brochures developed



DATA ON THE WEB
Volunteers submit their observations using the CoCoRaHS website or app. Observations are immediately available to the public via maps and data analysis tools, and to data users via the CoCoRaHS API. Data users such as scientists, resource managers, decision makers and others have come to rely on the high density, high quality measurements provided by CoCoRaHS observers.

CoCoRaHS is EDUCATIONAL

CoCoRaHS offers learning opportunities too. In addition to training statewide newsletters and the 'Message of the Day', members also enjoy opportunities to attend Webinars featuring experts in weather, climatology and other pertinent disciplines. CoCoRaHS offers classroom resources for K-12 teachers. Students get to collect and submit real scientific data - all while earning State and National Standards in science, math, geography, and more!

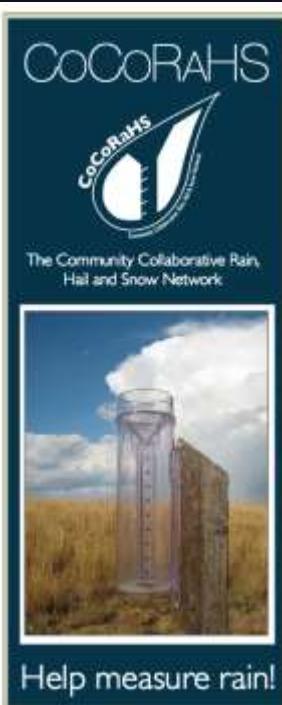


JOIN COCORAHS TODAY!
CoCoRaHS is a practical, approachable and useful activity. If you have an interest in weather and would like to help your local community, as well as scientists and others involved in preparedness, then CoCoRaHS is for you. It only takes a few minutes a day and gives you the chance to participate in real hands-on science. You'll be amazed at what you learn as you become more aware of the variable weather that impacts you, your neighbors, your state and our entire country.

THANKS
CoCoRaHS is supported by many sponsors and collaborators. To view a full list, please visit the CoCoRaHS Web page.

FOR MORE INFORMATION CONTACT:

www.cocorahs.org



United States Expansion



Order of States Joining the CoCoRaHS Network

1. Colorado (1998)
2. Wyoming (2003)
3. Kansas (2004)
4. New Mexico (March 2005)
5. Texas (April 2005)
6. Maryland (October 2005)
7. Virginia (October 2005)
8. District of Columbia (October 2005)
9. Pennsylvania (October 2005)



CoCoRaHS
welcomes
California



CoCoRaHS
Coming to Florida
October 1st

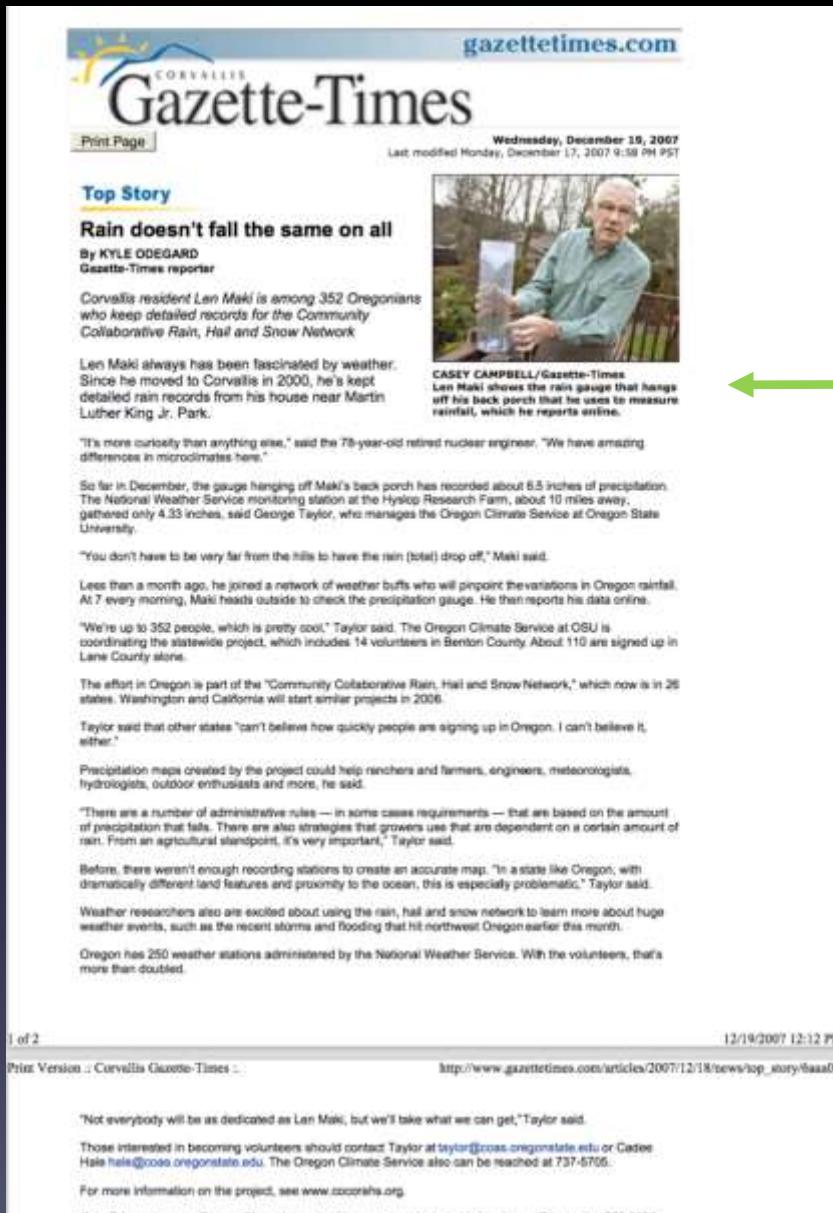


**CoCoRAHS
WELCOMES
CONNECTICUT**



**COCORAHS
MINNESOTA
DECEMBER 2009**

Oregon begins Dec 2007



Top Story

Rain doesn't fall the same on all

By KYLE ODEGARD
Gazette-Times reporter

Corvallis resident Len Maki is among 352 Oregonians who keep detailed records for the Community Collaborative Rain, Hail and Snow Network.

Len Maki always has been fascinated by weather. Since he moved to Corvallis in 2000, he's kept detailed rain records from his house near Martin Luther King Jr. Park.

"It's more curiosity than anything else," said the 78-year-old retired nuclear engineer. "We have amazing differences in microclimates here."

So far in December, the gauge hanging off Maki's back porch has recorded about 6.5 inches of precipitation. The National Weather Service monitoring station at the Hyslop Research Farm, about 10 miles away, gathered only 4.33 inches, said George Taylor, who manages the Oregon Climate Service at Oregon State University.

"You don't have to be very far from the hills to have the rain [total] drop off," Maki said.

Less than a month ago, he joined a network of weather buffs who will pinpoint the variations in Oregon rainfall. At 7 every morning, Maki heads outside to check the precipitation gauge. He then reports his data online.

"We're up to 352 people, which is pretty cool," Taylor said. The Oregon Climate Service at OSU is coordinating the statewide project, which includes 14 volunteers in Benton County. About 110 are signed up in Lane County alone.

The effort in Oregon is part of the "Community Collaborative Rain, Hail and Snow Network," which now is in 26 states. Washington and California will start similar projects in 2008.

Taylor said that other states "can't believe how quickly people are signing up in Oregon. I can't believe it, either."

Precipitation maps created by the project could help ranchers and farmers, engineers, meteorologists, hydrologists, outdoor enthusiasts and more, he said.

"There are a number of administrative rules — in some cases requirements — that are based on the amount of precipitation that falls. There are also strategies that growers use that are dependent on a certain amount of rain. From an agricultural standpoint, it's very important," Taylor said.

Before, there weren't enough recording stations to create an accurate map. "In a state like Oregon, with dramatically different land features and proximity to the ocean, this is especially problematic," Taylor said.

Weather researchers also are excited about using the rain, hail and snow network to learn more about huge weather events, such as the recent storms and flooding that hit northwest Oregon earlier this month.

Oregon has 250 weather stations administered by the National Weather Service. With the volunteers, that's more than doubled.

1 of 2 12/19/2007 12:12 PM

Print Version :: Corvallis Gazette-Times :: http://www.gazettetimes.com/articles/2007/12/18/news/top_story/8aaad0...

"Not everybody will be as dedicated as Len Maki, but we'll take what we can get," Taylor said.

Those interested in becoming volunteers should contact Taylor at taylor@cos.oregonstate.edu or Gadee Hale at hale@cos.oregonstate.edu. The Oregon Climate Service also can be reached at 737-6705.

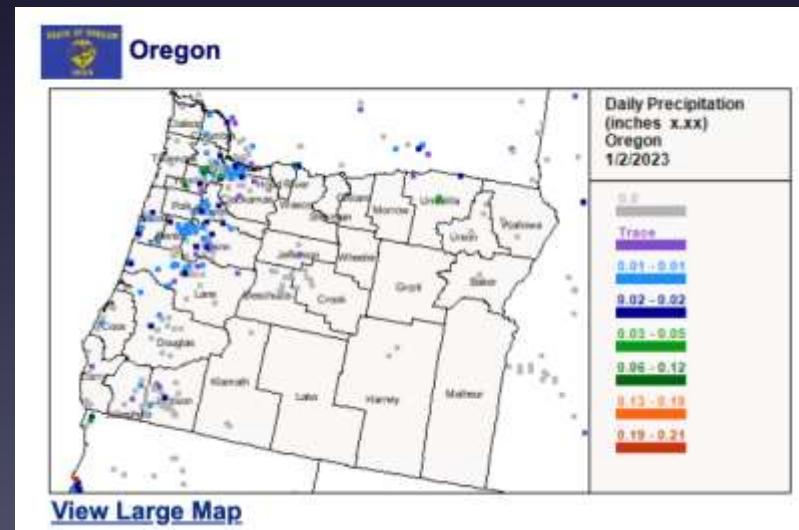
For more information on the project, see www.cocrahs.org.

Kyle Odegard/Corvallis Gazette-Times. He can be reached at kyle.odegard@oregonlive.com or 503-348-8229.

Thanks to the late George Taylor, Oregon jumped out to the quickest start of any state!



This well-timed article came out on the day of a heavy winter rain in Oregon and over 200 new observers signed up that day.



CoCoRaHS Funding

2007 the beginning of CoCoRaHS Fundraising

20FORCOCORAHS "20TH Anniversary" FUNDRAISER

DONATE 20 dollars

JUNE 11-17

AQUA BOTTLE - \$60 AND ABOVE DONATION



Front



Back

"YEAR END" FUNDRAISER NOW THRU JAN 7, 2017

FIVEFORCOCORAHS

DONATE five dollars

Just **5 FIVE**

PLEASE DONATE TODAY!

\$5.00

Your \$5.00 donation goes a long way to keep CoCoRaHS sustainable.

"FIVE FOR COCORAHS" Campaign

NOW THROUGH JANUARY 31, 2010

Nolan will fly to your location



RED LOBSTER



SUBWAY



Then speak to a group of your family & friends or civic group afterwards



Have dinner with you (& up to four) at the restaurant of your choosing (not limited to those above)

TENFORCOCORAHS

DONATE ten dollars



Now thru January 8th

"YEAR-END" FUNDRAISER

Local Picnics for Volunteers



CoCoRaHS State Newsletters

Begin around 2007



Welcome to
The
Texas CoCoRaHS
Observer Newsletter
The purpose of this newsletter is to keep observers informed of the latest news, events, training, and happenings related to the CoCoRaHS program here in Texas, as well as news about the latest weather patterns affecting each region of Texas seasonally.

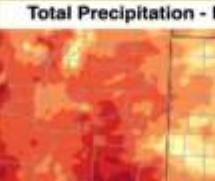
Inside this issue

West Texas Summary
By: James DeVerry



Texas Weather Summary Spring, 2022

John Nielsen-Gammon, Texas State Climatologist
Figure from the HISM group, Oregon State University, generated using SC-ACIS



Southern New England

August 2022

Summer thunderstorms make precipitation variable. Rain on one side of town, but not the other. Having as many as you helps capture the variability that summer brings.

This group continues to stand out. Look at the map of Condition Monitoring Reports and see this cluster of reports on our area. Significant Weather Reports continues to be a strong point of ours. Between tropical cyclones named Henri and Ida in Year 2021, and our typical array of snow events, our area leads the network in the past 12 months. And the Rules of the Snow, those unique observers who report snow fall and snowpack with every report, are a strong concentration in our area.

Drought assessments continue. The Drought Meetings will continue until they are rained out. When it comes to assessing drought, having all of you report as frequently as you, leaves little doubt!

Plenty included about your station totals.

We lead off, as we always do, with our version of "The Grand List". Our first stations have crossed 5,000 Daily Reports.

Let's get into it:

Southern New England CoCoRaHS



The Hoosier Observer
Indiana CoCoRaHS monthly e-newsletter

October 2022

September 2022 Precipitation in Indiana

September precipitation was quite dry across Indiana with only 2.22 inches of rain - 1.07 inches below the 1991-2020 normal. This caused abnormally dry conditions (as categorized by the U.S. Drought Monitor) to spread across the state causing stressed vegetation, low soil moistures, and low stream and lake levels. The map shown illustrates the percentage of the 1991-2020 normal precipitation for September 2022 indicating where the monthly precipitation was above or below normal. Of the CoCoRaHS observers who provided data every day, the greatest precipitation total for the month was 6.09 inches at NOBLESVILLE 3.8 SSE (Hamilton County), whereas the lowest monthly precipitation total was only 0.75 inches at MILLTOWN 6.1 SW (Crawford County). Of those with complete monthly records, the maximum 1-day total was 4.10 inches on September 11th at CARMEL 2.8 NW (Hamilton County).

Accumulated Precipitation (in): Percent of 1991-2020 Normals

September 01, 2022 to September 30, 2022

A map of Indiana showing precipitation patterns. The map is color-coded to represent the percentage of the 1991-2020 normal precipitation for September 2022. Darker colors indicate areas where precipitation was below normal, while lighter colors indicate areas where it was above normal.

Fall, 2022 Alaska CoCoRaHS Newsletter

A thumbnail image of the Alaska CoCoRaHS newsletter for Fall, 2022. It features a blue and white logo for CoCoRaHS Alaska. The main content includes a 'WELCOME TO THE ALASKA COCORHHS NEWSLETTER' section and a 'Thank you for submitting your daily precipitation reports!' section.

This newsletter will discuss Spring and Summer 2022 updates to the Alaska Community Collaborative Daily Rain Gauge Network.

Thank you for submitting your daily precipitation reports! This newsletter's purpose is to inform all of the important news about weather events in Alaska, and to talk about current events and opportunities.

We would like to thank the Canadian Committee for Environmental Cooperation (CCC) and Local Environmental Observers (LEO) for their support of CoCoRaHS Alaska.

The Local Environmental Observers (LEO) logo, featuring a stylized globe and the acronym LEO.

CoCoRaHS March Madness 2008

March 1–31, 2008

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness 2009

March 1–31, 2009

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness 2010

March 1–31, 2010

CoCoRaHS

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness 2011

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CoCoRaHS

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CoCoRaHS March Madness 2014

March 1–31, 2014

CoCoRaHS

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness 2015

March 1–31, 2015

CoCoRaHS

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness 2016

March 1–31, 2016

CoCoRaHS

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness 2017

March 1–31, 2017

CoCoRaHS

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness 2018

March 1–31, 2018

CoCoRaHS

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness 2019

March 1–31, 2019

CoCoRaHS

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness 2020

March 1–31, 2020

CoCoRaHS

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness 2021

March 1–31, 2021

CoCoRaHS

How many new volunteers can you recruit in your state?

CoCoRaHS March Madness

Begins in 2008



WERA CONFERENCE - 2009

Managing & Utilizing Precipitation Observations from Volunteer Networks



NEXT YEAR's CONFERENCE May 15 – 17 , 2024

Photo: Estes Park, CO – May 19, 2017

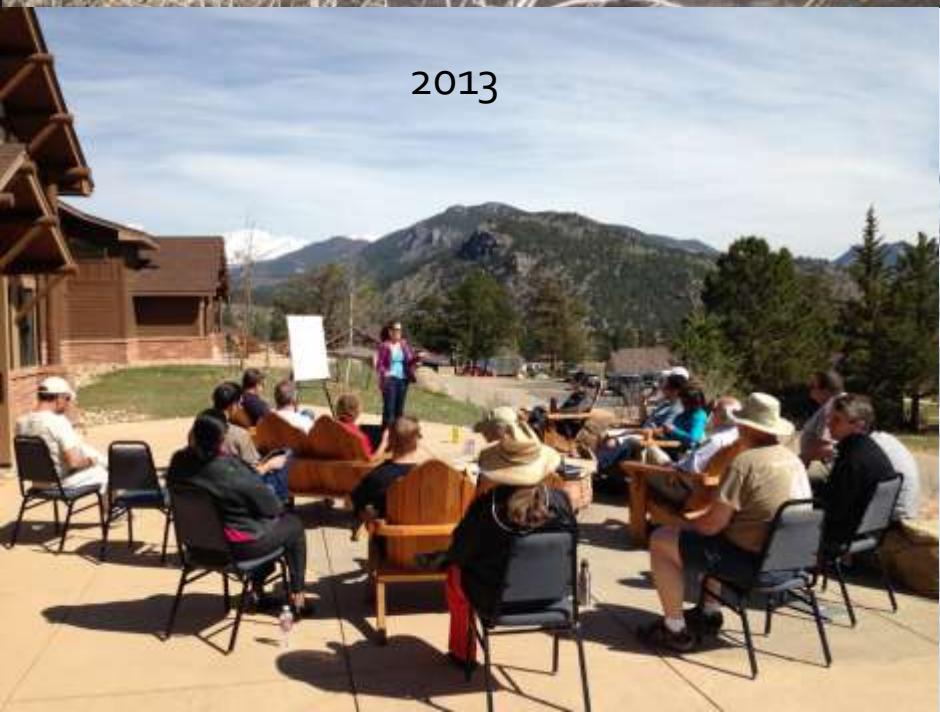
2008



2009



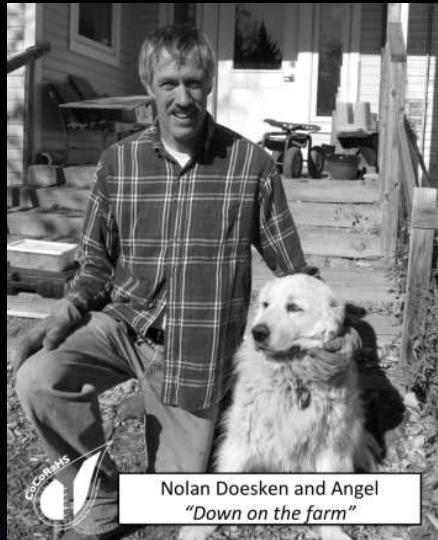
2013



2017



2010 - 2016



Nolan Doesken and Angel
"Down on the farm"



CoCoRaHS
WxTalk
Webinar Series
Today's Guest: [Billy Kniffen](#)
"Rainwater Harvesting - Catching and Using It!"



FIVEFORCOCORAHHS
DONATE **5five** **NOW THRU JAN 3, 2011**

"YEAR END" FUNDRAISER



CoCoRaHS CANADA  COMING SOON !



How to Measure Extreme Rainfall



INTERNATIONAL AND
NEW MEASUREMENTS



COCORAHS **HAIL WEEK**

MAY 2-8, 2010

Monday, May 3rd

"Ten things you wanted to know about hail, but were afraid to ask." Don't be afraid, we have the answers.

Tuesday, May 4th

"Hail Yes or Hail No!" . . . the climatology of hail in the United States. A look at hail across the country.

Wednesday, May 5th

CoCoRaHS Hail Reports . . . What are they, how can I access them? How you can help report hail.

Thursday, May 6th

CoCoRaHS Hail Pads. How to make a hail pad . . . its fun and easy to do.

Friday, May 7th

CoCoRaHS Hail Photo Day . . . Have a great photo of hail, e-mail it to us today!

Saturday, May 8th

"CoCoRaHS National 'Put out your Hail Pad' Day"

Have a hail pad? . . . join thousands around the country who will put out their hail pads today. It's that time of year!

Launch of CoCoRaHS Hail Week



Drought impact reporting begins 2010

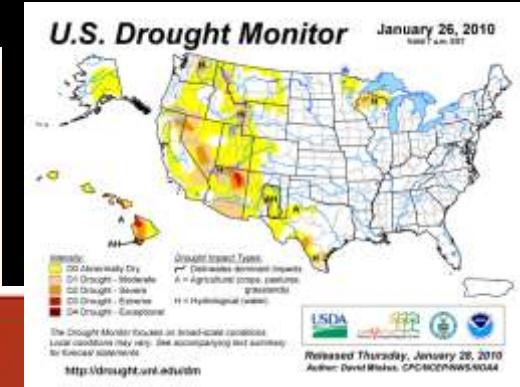
COWS GIVING POWDERED MILK?

CoCoRaHS Drought Impacts

Report

COUGHIN' MORE OFTEN?

CoCoRaHS Drought Impacts



REPORTING DROUGHT IMPACTS

A Guide to Reporting 

Drought Impacts

Report Your Drought Impacts
Beginning February 1, 2010

CoCoRaHS Drought Impacts

DRINKING WATER TASTE DUSTY?

CoCoRaHS Drought Impacts

Report

IS 'BROWN' THE NEW GREEN?

CoCoRaHS Drought Impacts

BOATING ACTIVITY HIT BOTTOM?

CoCoRaHS Drought Impacts

Report how drought is impacting your community with a "Drought Impact Report"

State Climate Series - 2010



New Mexico – Would you like it Red or Green?

By David DuBois, New Mexico State Climatologist

New Mexico has a climate for just about everyone. The state is a land of diverse climate regions with elevations ranging from the lowlands of the Chihuahuan Desert to the high elevation alpine peaks. Elevations range from 2,817 feet in the south along the Pecos River to the top of Wheeler Peak at 13,161 feet high in the Sangre de Cristo Mountains. The low deserts of the south can be hot in the summer but mild in the winter. Maximum temperatures can reach 110 F in the southeast part of the state while the higher elevation towns are in the 80s just an hour drive away. The weather station at Orogrande holds the record for highest temperature of 116 F in July of 1934. Winter cold snaps can drop temperatures to below zero Fahrenheit in the mountains and in the teens or lower throughout the state. The official lowest temperature recorded is -50 F at Gavilan (Rio Arriba County) back in February of 1951.

The higher elevations receive the most precipitation with some locations in the Sangre de Cristo, San Juan, San Pedro, and Mogollon Mountains receive more than 45 inches per year. In general the central valley, south central and northwestern parts of the state are the driest. Much of this area receives less than 10 inches of annual precipitation with some stations recording less than 7 inches. For example the Newcomb Cooperative climate station in the northwest had an annual average of 5.97 inches of precipitation based on the years between 1971 and 1990.

Average annual snowfall ranges from less than an inch at the south to more than 100 inches at Northern Mountain stations. The Red River Cooperative station averaged 147 inches per year based on the data from 1906 to 2008. Snowfall may exceed 300 inches in the highest mountain peaks. While snowfall is a variable in the mountains with some parts receiving more than a foot of snow per year, a location in New Mexico is exempt from snow but the lowlands receive little accumulation.

Many locations receive most of their annual precipitation during the monsoon season. Thunderstorms in summer can cause localized flooding.

Severe weather in the form of tornados are most frequent from June to August. Tornados are most frequent in the eastern part of the state.

The spring is the time for frequent wind storms. High winds are common in the eastern part of the state. Wind speeds can reach speeds of more than 90 miles per hour, similar to that in hurricanes.

For more information on New Mexico's climate, visit <http://weather.nmsu.edu/>



The Southern Regional Climate Center

As we continue our "State Climates" series, we move to the third region of the country and look at the states of the Southern Regional Climate Center, one of six regional climate centers in the United States.

The Southern Regional Climate Center (SRCC) was established in 1991 at Louisiana State University (LSU) as the last of six Regional Climate Centers providing regional climate services in the U.S. The SRCC consists of six states that include Oklahoma, Texas, Arkansas, Louisiana, Mississippi, and Tennessee. Our region is characterized by a highly variable rainfall regime that varies from the dry steppes of western Texas and Oklahoma, averaging as low as 10" per year, to the semitropical region of the Central Gulf Coast of Louisiana and Mississippi that averages of 60" per year. Our service support for sectors and industries is also diverse and includes areas such as transportation, construction, risk management, agriculture, and water resource management. Government agencies at local, state, and national levels are an especially important service sector at the SRCC. We provide climate information that supports planning, policy, and management decisions, and we monitor changing climate conditions that impact regional decisions. We also support emergency managers with tropical-storm and hurricane events in the Gulf of Mexico by providing planning and exercise support. During declared emergencies we provide operational information support as storms approach the coast and as storm recovery operations occur within impacted areas.

In addition to service provision and monitoring activities, the SRCC also maintains an active role in the development of leading-edge information technology. We develop and improve products for the Applied Climate Information System (ACIS) investigate and adopt new technologies for interactive graphical characteristics of climate monitoring and tracking system that progress of error corrections that data-collection systems, working with a NOAA Regional Climate Planning Program, to help plan.

Focus on the third region of our visit: <http://www.srcc.lsu.edu>

The logo for the CoCoRaHS 'State Climates' Series. It features the text 'CoCoRaHS' in a stylized, italicized font above 'STATE CLIMATES' SERIES' in a bold, sans-serif font.

The logo for NOAA's Regional Climate Centers. It features the text 'NOAA'S REGIONAL CLIMATE CENTERS' in a bold, sans-serif font.

Master Gardeners, Master Naturalists, Conservation Districts



The expansion of our observer base

Outreach at Weather Festivals



Not only at AMS, but NWA and others around the country

San Antonio, New Orleans, Phoenix, Atlanta, Seattle, Austin . . .

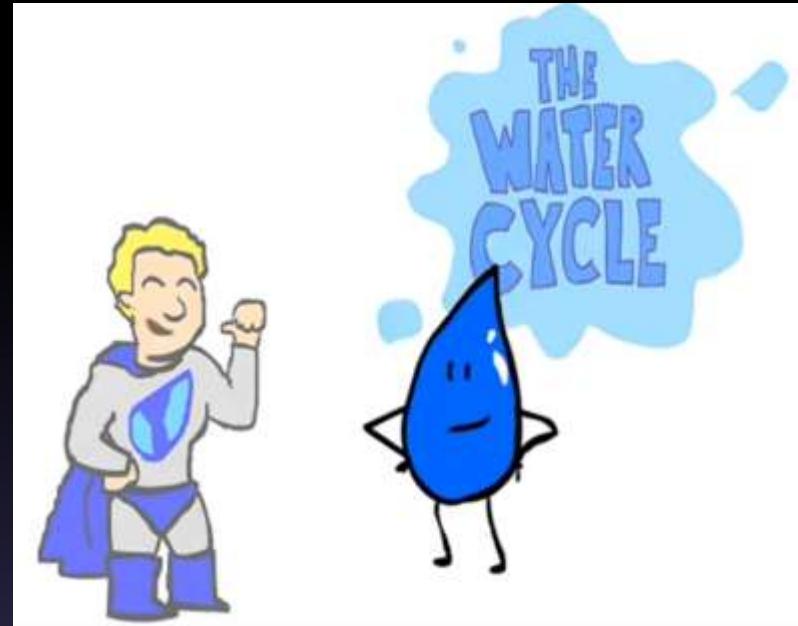


Collaboration increases with State Climate office's and Universities



CoCoRaHS Animations

Early 2010's



Training Animations ► Play all

CoCoRaHS Training Videos



Getting Started with
CoCoRaHS - The Basics of...

CoCoRaHS HQ
84K views • 8 years ago



Measuring Hail

CoCoRaHS HQ
12K views • 7 years ago



How to Measure Extreme
Rainfall

CoCoRaHS HQ
33K views • 9 years ago



Setting up for Measuring
Snow

CoCoRaHS HQ
19K views • 10 years ago



Daily Precipitation When It
Snows

CoCoRaHS HQ
13K views • 10 years ago

Reference ET_o 2011

CoCoRaHS COMMUNITY COLLABORATIVE RAIN, HAIL & SNOW NETWORK  Select Language 

Home | Countries | Maps | View Data | Maps | My Data | My Accounts | Admin | Logout

Reference Evapotranspiration

Measuring Reference Evapotranspiration
"The 'up' side of the water cycle" 

MEASURING REFERENCE EVAPOTRANSPIRATION (ET_o) 

View the ET_o guide via:  [pdf](#)

HTML (coming soon)  [HTML](#)

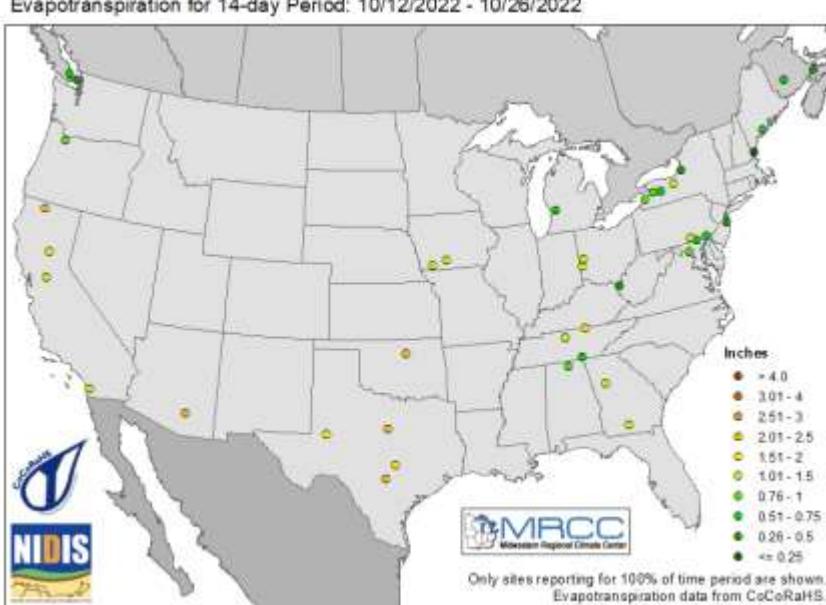
ET (evapotranspiration) is the water evaporated from the ground back to the atmosphere both as transpiration from the leaves of plants and also as direct evaporation from open water and soil.

Reference Evapotranspiration is defined as "the ET from an extensive surface of clipped grass (ET_o) or alfalfa (ET_f) that is well-watered, and fully shades the ground." (Kimberly RSE Center, Univ. of Idaho)

Help CoCoRaHS measure ET_o ! We know how much water comes from the sky (precipitation) since many of us measure it. Knowing how much water is leaving the soil and returning to the atmosphere is just as important. It matters for agriculture, lawn care, weather prediction, hydrology and much more, so we should try to measure it.

Interested in becoming a ET_o observer?

Evapotranspiration for 14-day Period: 10/12/2022 - 10/26/2022

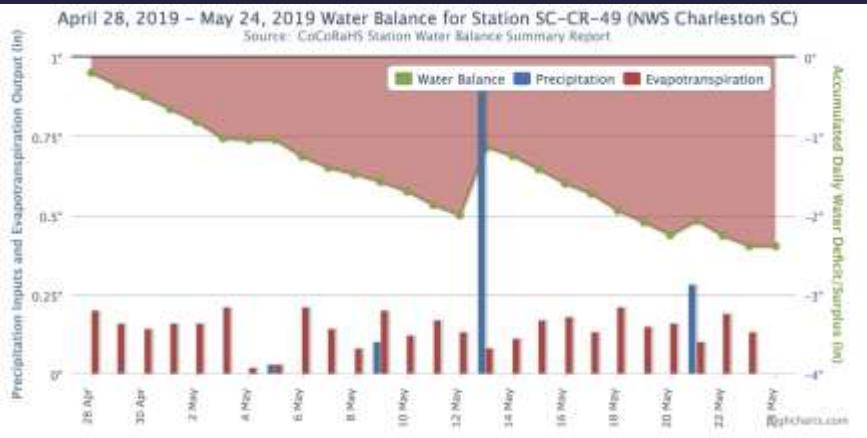


Only sites reporting for 100% of time period are shown.
Evapotranspiration data from CoCoRaHS.

Measuring Reference Evapotranspiration
"The 'up' side of the water cycle" 



Water balance

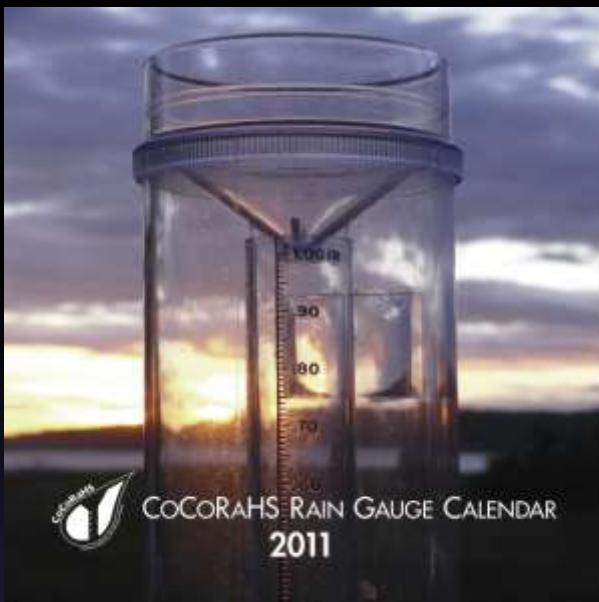
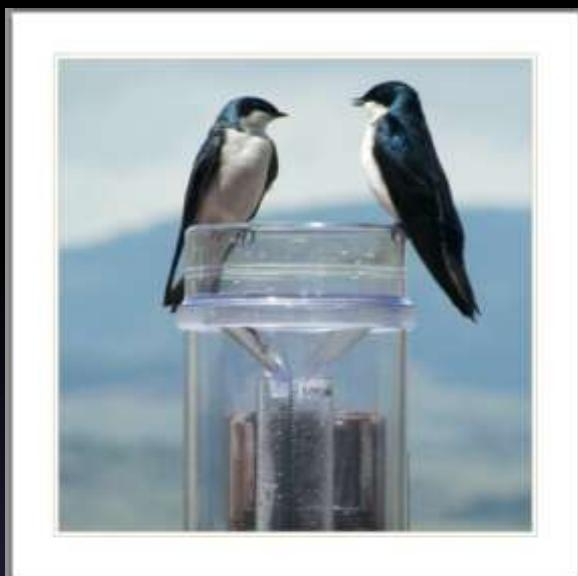


CoCoRaHS at Major League Baseball 2011



Target Field, Minneapolis, MN

CoCoRaHS Rain Gauge Calendars



CoCoRaHS WxTalk Webinars launched 2011

CoCoRaHS WxTalk Webinar Series Today's Guest: Jamie Rhome 1:22:52

CoCoRaHS WxTalk Webinar Series Today's Guest: Gail Hartfield 1:13:54

CoCoRaHS WxTalk Webinar Series Today's Guest: Russ Schumacher 1:26:09

CoCoRaHS WxTalk Webinar Series Today's Guest: Keith Seitter 1:08:21

CoCoRaHS WxTalk Webinar Series Today's Guest: Scott Denning 1:15:27

Webinar #86 - Thursday, June 29, 2023

The 420,002,023rd Year of Biomass Burning on Earth

Tim Brown

Director, Western Regional Climate Center
Desert Research Institute
Reno, NV



[\(biography\)](#)

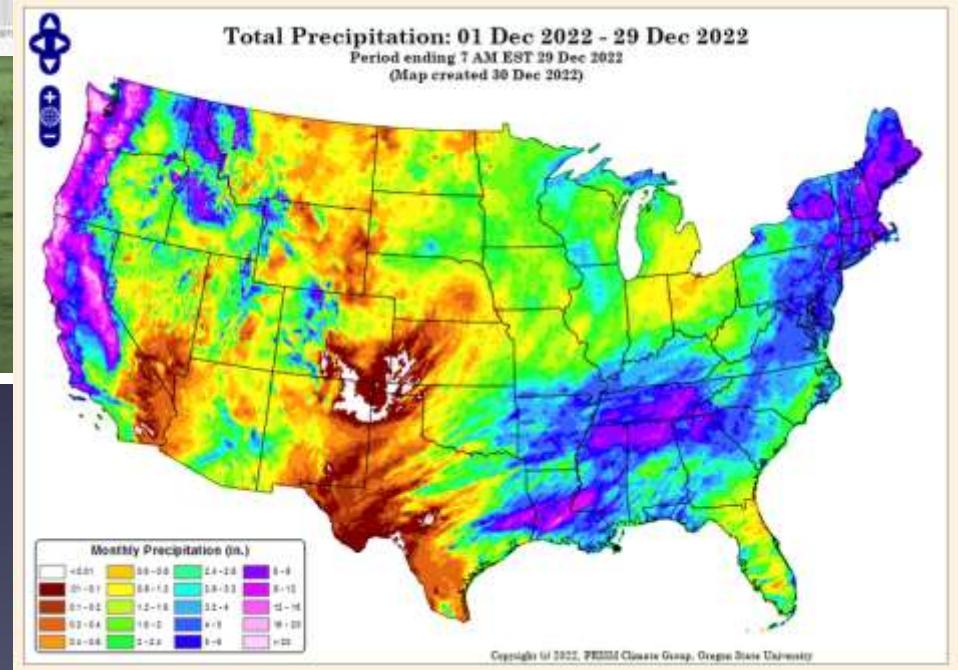


CoCoRaHS WxTalk Webinar Series Today's Guest: Mark Moore "Flood Warning Systems"

Now in our 12th Season

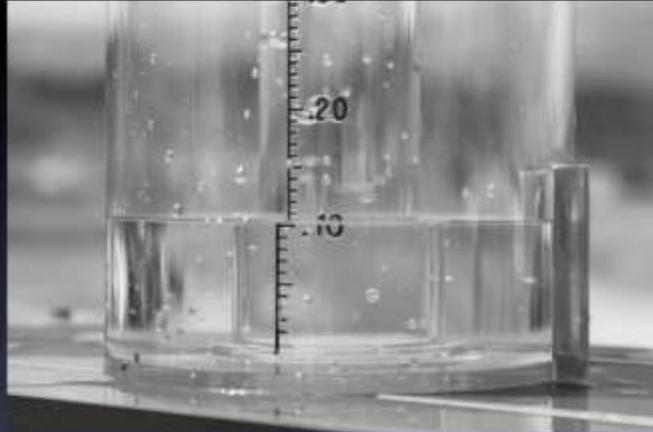
Collaboration with PRISM

Early 2010's



CAMPAIGN to let observers know that their observations are used, that they make a difference

Who uses CoCoRaHS Observations?



- 1. Weather Forecasters
- 2. Hydrologists
- 3. Water management
- 4. Researchers
- 5. Agriculture
- 6. Climatologists
- 7. Insurance Industry
- 8. Engineering
- 9. Recreation
- 10. Many others

"CoCoRaHS is CRITICAL (my emphasis) to hazardous weather operations at the NWS Austin-San Antonio Weather Forecast Office. We utilize the daily precipitation reports to produce maps such as the one attached, which are used extensively by the media (directly shown on TV broadcasts), our emergency management partners (for briefing officials and planning search and recovery operations), and the general public."

Jon Zeitler – NWS Austin-San Antonio Weather Forecast Office

Field Photo Weekends start in 2012

Field Photo Weekends



MAY 27, 28 & 29, 2017

Field Photo Weekend

Join thousands of citizens across the country on Memorial Day Weekend (May 27, 28, 29) as we photograph our landscapes in six different directions, documenting climate impacts over time.

We'll do this again over the 4th of July and Labor Day Weekends.

Field Photo Weekends - Documenting Visual Landscape Impacts over Time



Field Photo Weekends 
Feb 14 - 16, 2015

Monday, 26 June 2017, Presentation 1.2
AMS 23rd Conference on Applied Climatology
Henry Reges et al, CoCoRaHS/Colorado State Univ., Fort Collins, CO

 Colorado State University
 I SEE CHANGE
 SCIPP
GLOBAL RAIN TEAM

By 2012 coordination grows to over 267 volunteer state/regional coordinators



Current CoCoRaHS Headquarters Team

International Stage begins 2013



The addition of Canada, Puerto Rico, the U.S. Virgin Islands and the Bahamas
Recognition by the World Meteorological Organization (WMO), Commission for
Environmental Cooperation, Caribbean Outlook Forum, National Hurricane Center

Expansion to Canada, Puerto Rico, the U.S. Virgin Islands and the Bahamas 2011 - 2016



White House Vegetable Garden - 2015

A CoCoRaHS rain gauge was installed at the White House Vegetable garden in 2015.

The observation was taken daily by the U.S. National Parks Administration. This promoted Citizen Science and provided a key observation point in the District of Columbia, which helped fill in a gap in a data sparse part of the District.

Unfortunately, the gauge was removed by the next administration and has yet to return. ☹



WEATHER UNDERGROUND | Maps & Radar | Severe Weather | News & Blogs | Photos & Video | Activities | More ▾

News & Blogs

Dr. Jeff Masters | Weather Blogs | News Stories | Infographics | Posters

White House Joins CoCoRaHS; A Belated March Arrival of Severe Weather

By Bob Henson, 9:29 PM GMT on March 24, 2015

11 2

The fine art of weather watching at the nation's capital, which goes all the way back to Thomas Jefferson, Philadelphia, and the Declaration of Independence, got a shot of adrenaline with the announcement that a Pennsylvania native in Washington, D.C. The news broke on Science Fair

Land and Snow network (CoCoRaHS) involves more than 20,000 precipitation data and report it online each morning. The daily precipitation data

meteologist. The White House Climate Coalition

Food in Fort more than \$200 University. State 12, was ve rainfall that i-develop a ing in 1998. radio over the named in 2003. he network ends as well as

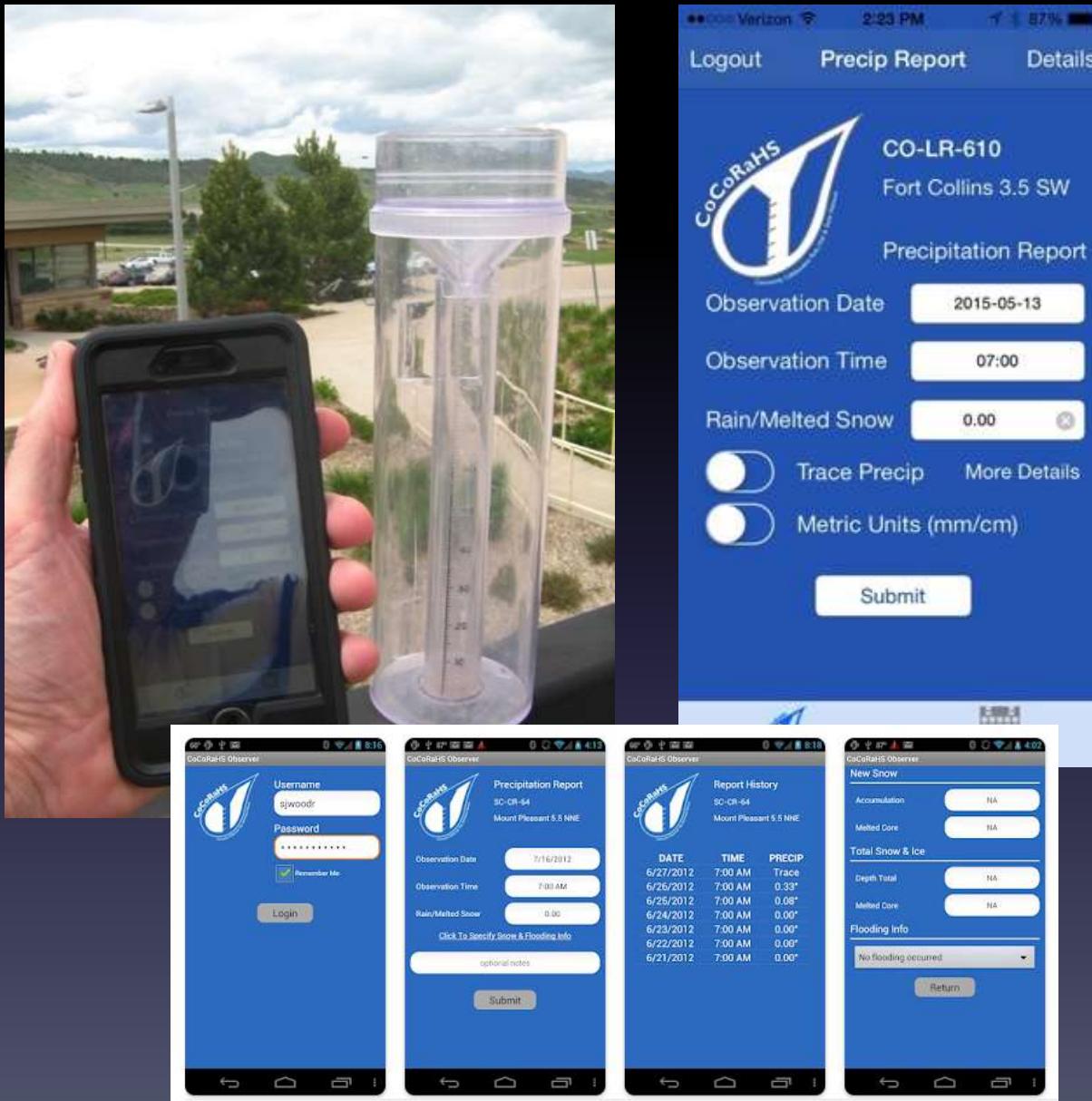
[Edit](#) [J+1](#) [Share this Page](#)

A smaller photograph showing a group of people, including a man in a suit, smiling and posing for a photo, likely at an event related to the White House's involvement with CoCoRaHS.

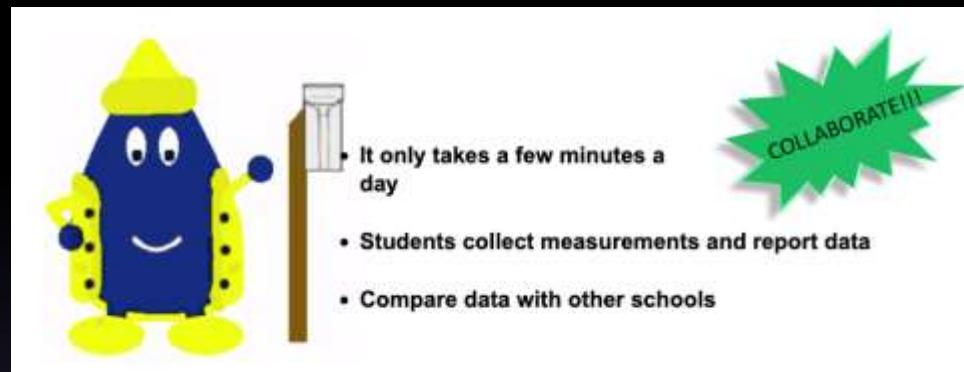
PBS – The Crowd in the Cloud



The Mobile App – Mid 2010's



CoCoRaHS School Outreach



Visits to NWS and State Climate Offices to support coordinators



Begins in 2015

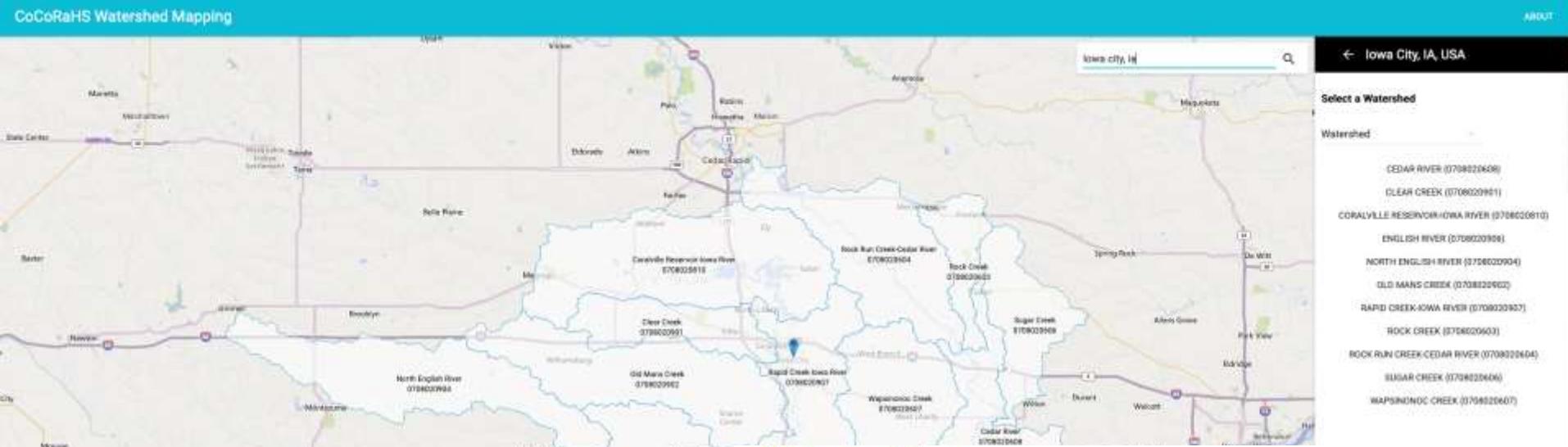
2017 - 2023



NEARING 25

CoCoRaHS Watershed Mapping Tool - 2017

CoCoRaHS Watershed Mapping



← Iowa City, IA, USA

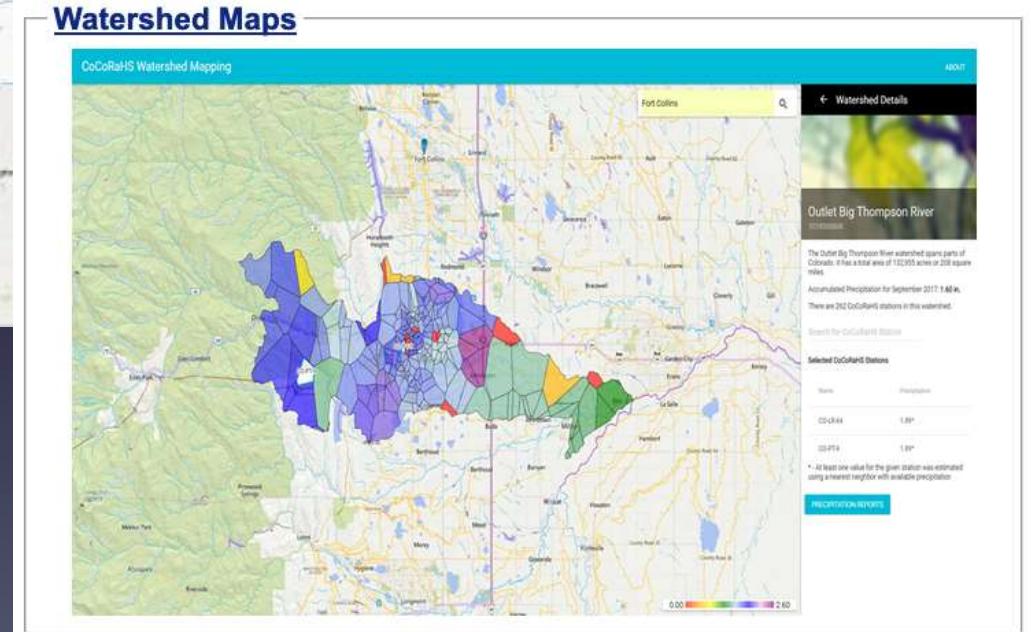
Select a Watershed

Watershed:

- CEDAR RIVER (0708020608)
- CLEAR CREEK (0708020961)
- CORALVILLE RESERVOIR/IAWA RIVER (0708020810)
- ENGLISH RIVER (0708020908)
- NORTH ENGLISH RIVER (0708020904)
- OLD MAIN CREEK (0708022962)
- RAPID CREEK-IAWA RIVER (0708020907)
- ROCK CREEK (0708020903)
- ROCK RUN CREEK/CEDAR RIVER (0708020604)
- SUGAR CREEK (0708020906)
- MAPSINONOC CREEK (0708020607)

Watershed Maps

CoCoRaHS Watershed Mapping



← Watershed Details

Outlet Big Thompson River

The outlet Big Thompson River watershed spans parts of Colorado. It has a total area of 1229.5 acres or 2.08 square miles.

Accumulated Precipitation for September 2017: 1.60 in.

There are 262 CoCoRaHS stations in this watershed.

Search for CoCoRaHS Station

Selected CoCoRaHS Stations

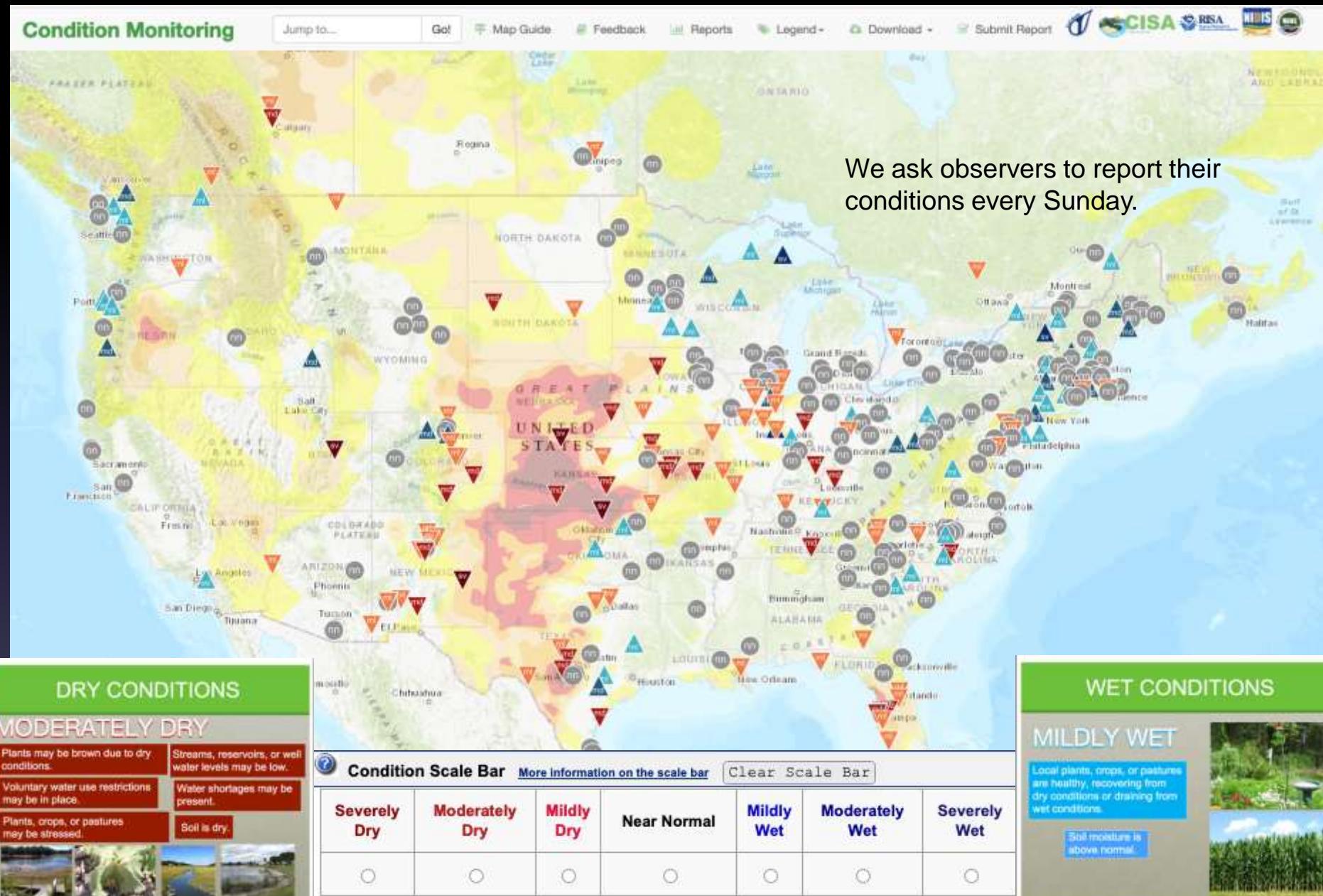
| Name | Precipitation |
|-------|---------------|
| CDX44 | 1.80" |
| CDP14 | 1.80" |

* At least one value for the given station was estimated using a nearest neighbor with available precipitation

PRECIPITATION REPORTS

<https://cocorahs.erams.com/>

Condition Monitoring 2017-18



| | | | |
|----------|----------------------|--------------|------|
| KS-FO-3 | Dodge City 2.5 NW | Ford | 6469 |
| KS-DC-1 | Norcatur 3.1 WSW | Decatur | 6443 |
| KS-DC-2 | Norcatur 4.4 S | Decatur | 6434 |
| KS-RL-1 | Manhattan 0.5 NE | Riley | 6366 |
| KS-PR-2 | Preston 3.2 WNW | Pratt | 6354 |
| KS-SH-16 | Goodland 10.3 WNW | Sherman | 6325 |
| KS-NS-6 | Arnold 4.8 NNW | Ness | 6248 |
| KS-EL-6 | Hays 1.7 NW | Ellis | 6188 |
| KS-EL-1 | Hays 2.7 ENE | Ellis | 6138 |
| KS-GY-4 | CIMARRON 7 SE | Gray | 6128 |
| KS-JO-6 | Olathe 3.3 ENE | Johnson | 6123 |
| KS-SH-14 | Goodland 13.2 SW | Sherman | 6064 |
| KS-DC-3 | Traer 2.5 NNW | Decatur | 6039 |
| KS-SG-2 | Maize 5.7 S | Sedgwick | 5966 |
| KS-SG-3 | Maize 3.4 SSW | Sedgwick | 5951 |
| KS-NS-5 | Utica 5.9 SSW | Ness | 5928 |
| KS-LY-2 | Emporia 0.9 W | Lyon | 5909 |
| KS-SN-5 | Topeka 8.5 E | Shawnee | 5890 |
| KS-SH-4 | Goodland 0.5 ENE | Sherman | 5860 |
| KS-BA-6 | Coats 6.6 WSW | Barber | 5825 |
| KS-CA-7 | Minneola 4.1 SSE | Clark | 5825 |
| KS-NT-3 | Norton 0.4 N | Norton | 5822 |
| KS-OS-4 | Osage City 5.2 SW | Osage | 5807 |
| KS-CD-1 | Jamestown 2.4 NW | Cloud | 5784 |
| KS-PT-1 | Onaga 2.1 NW | Pottawatomie | 5775 |
| KS-HM-5 | Syracuse 7.2 WSW | Hamilton | 5770 |
| KS-RN-19 | Plevna 1.4 NE | Reno | 5750 |
| KS-RN-7 | Andale 6.4 WSW | Reno | 5749 |
| KS-TH-18 | Colby 0.6 NNW | Thomas | 5728 |
| KS-RN-11 | South Hutchinson 10. | Reno | 5726 |
| KS-KM-2 | Penalosa 0.4 N | Kingman | 5723 |
| KS-CR-3 | McCune 1.6 NW | Crawford | 5702 |
| KS-BA-4 | Medicine Lodge 0.4 V | Barber | 5695 |
| KS-SH-21 | Goodland 12.1 NW | Sherman | 5684 |
| KS-ME-2 | MEADE 12 NW | Meade | 5669 |
| KS-FO-13 | Dodge City 1.9 N | Ford | 5642 |
| KS-KW-2 | Mullinville 12.5 S | Kiowa | 5636 |
| KS-WS-5 | Washington 7.3 NNE | Washington | 5605 |
| KS-CM-3 | Coldwater 6.7 NW | Comanche | 5602 |
| KS-SF-2 | Stafford 5.9 ESE | Stafford | 5566 |
| KS-TH-17 | Colby 1.3 NE | Thomas | 5566 |
| KS-RN-30 | Arlington 5.5 SSE | Reno | 5537 |
| KS-PR-4 | Preston 1.2 SE | Pratt | 5508 |

Many long-term
observers with
over 5,000
CoCoRaHS
observations
(over 13 years!)

Celebrating their dedication!!

Observer appreciation certificates



A screenshot of the National Weather Service website for Louisville, KY. The top navigation bar includes links for HOME, FORECAST, PAST WEATHER, SAFETY, INFORMATION, EDUCATION, NEWS, SEARCH, and ABOUT. A section for 'Allen County CoCoRaHS Observers Recognized' is highlighted. Below this, a weather forecast for Louisville is shown with a sun icon, 'A Few Clouds', and a temperature of 76°F (24°C). A photo shows two men, Joe Sullivan and Henry (Junior) Dawsner, shaking hands and holding a framed certificate. The certificate text includes: 'In appreciation for outstanding service in 2015 as a volunteer weather observer'. The photo is captioned 'NWS Louisville WCM Joe Sullivan and Henry (Junior) Dawsner'.

State Precipitation Records and CoCoRaHS

CAPITAL WEATHER GANG

This Baltimore suburb's seven feet of rain sets a new state record for Maryland in 2018

By Tom Atkins

March 26, 2019 at 2:03 pm EDT



Last week, the National Oceanographic and Atmospheric Administration's [State Climate Extremes Committee](#) met and voted in favor of declaring Catonsville's seven feet of rain a new Maryland state record for annual precipitation.

The measurement was made by volunteer weather observer Tom Atkins, a participant in the [CoCoRaHS](#) network. CoCoRaHS stands for Community Collaborative Rain, Hail & Snow Network and is composed of thousands of citizen scientists who gather precipitation data, many in their backyards.

Maryland

- LOCATION: Catonsville 1.2 NW (MD-BL-39)
- YEAR: Calendar Year 2018
- PRECIPITATION TOTAL: 84.56

New Jersey

LOCATION: West Milford Twp 3.2 NE (NJ-PS-16)

- YEAR: Calendar Year 2011
- PRECIPITATION TOTAL: 90.65"

Kansas

Location: Farlington 0.8 NNE (Farlington, KS)

- Date: 1 January – 31 December 2019
- Value: 75.33 inches

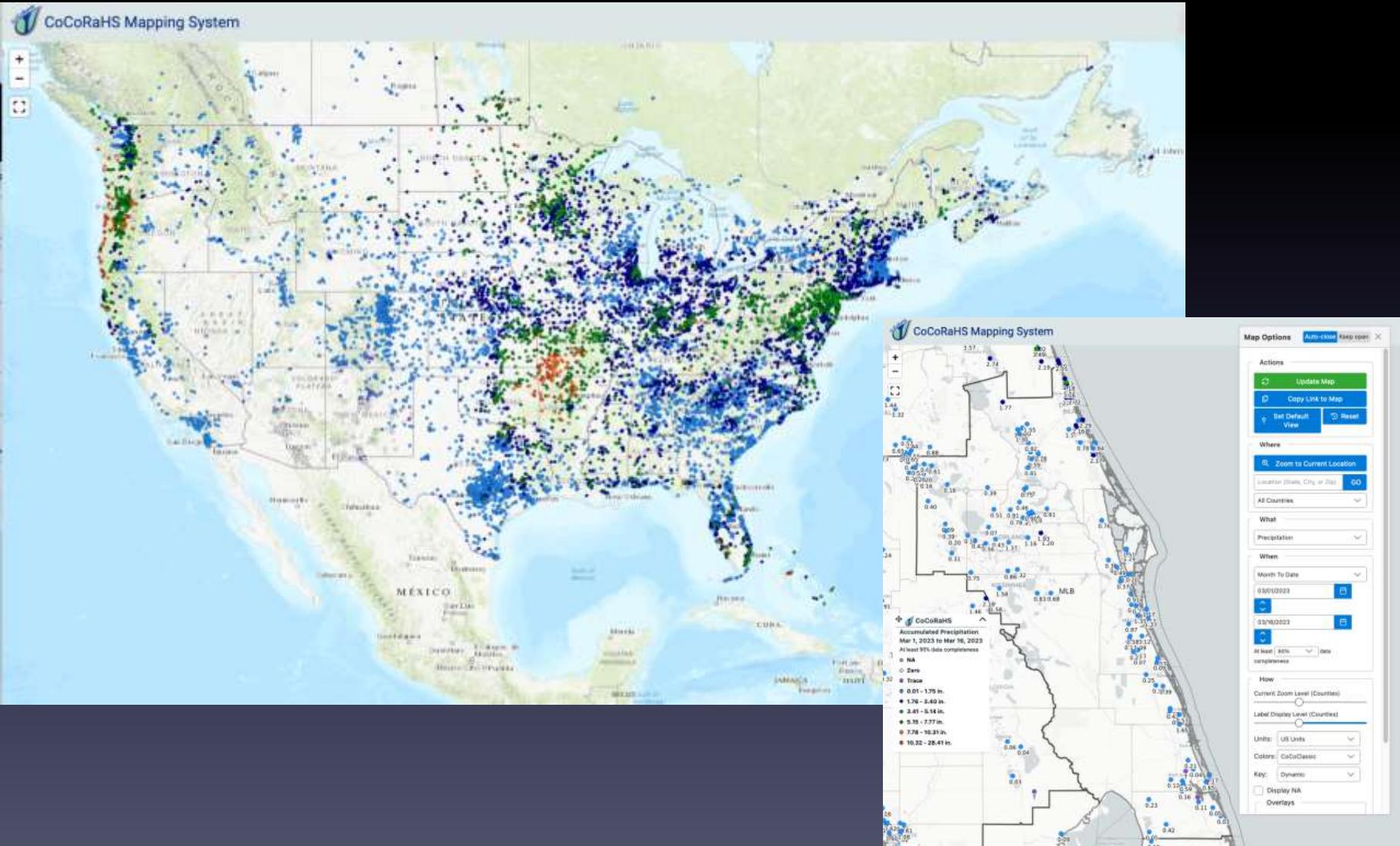
Delaware

Location: Greenwood 2.9 SE

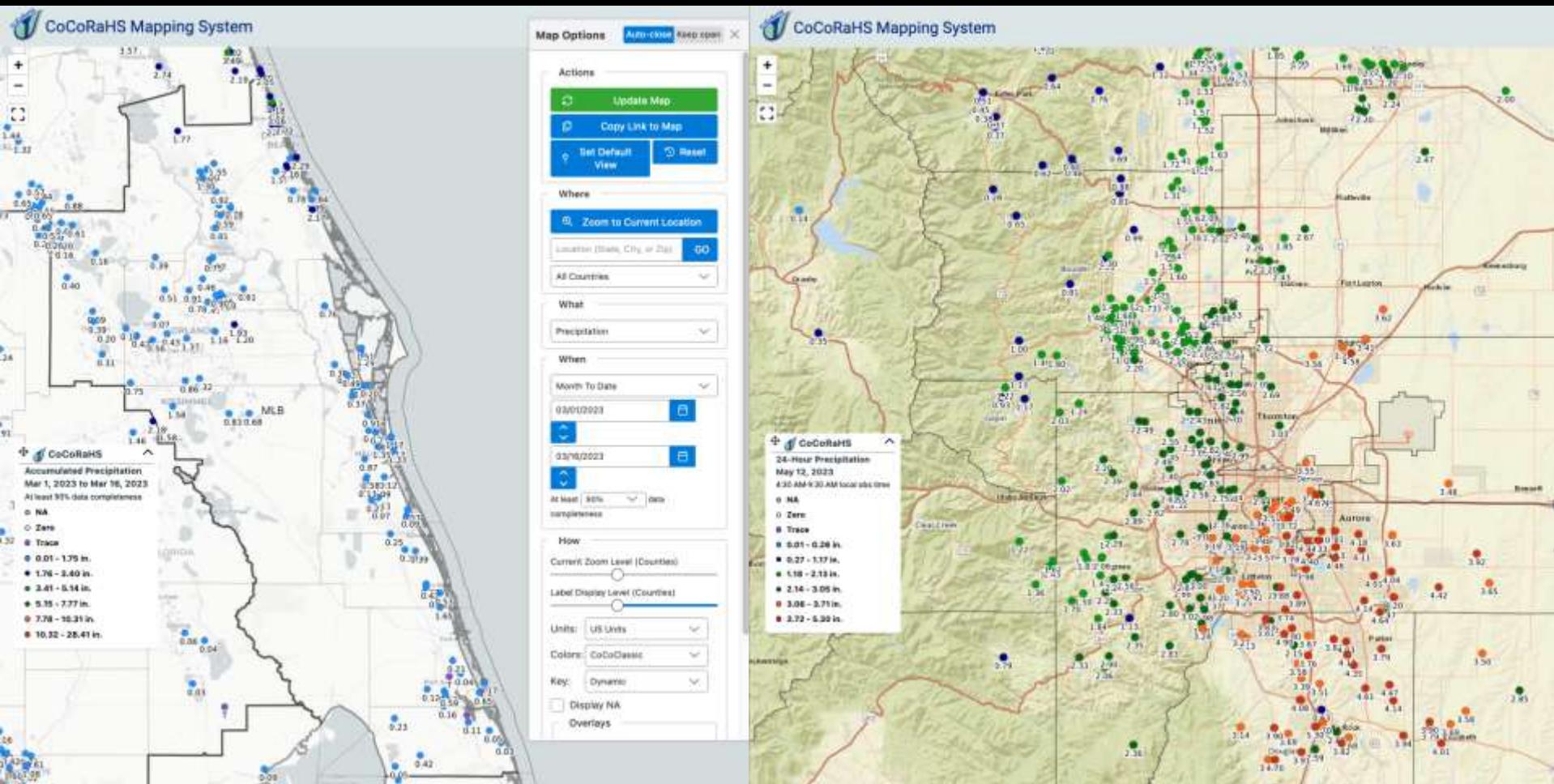
- Site Type: CoCoRaHS Observer
- Daily Snow Depth Record: 28 inches
- Date: February 7, 2010

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL ENVIRONMENTAL SATELLITE DATA
AND INFORMATION SERVICE
NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
151 PATTON AVE ROOM 120
ASHEVILLE NC 28801-5001

Interactive Mapping System debuts in August 2020



Dynamic Indeed!!



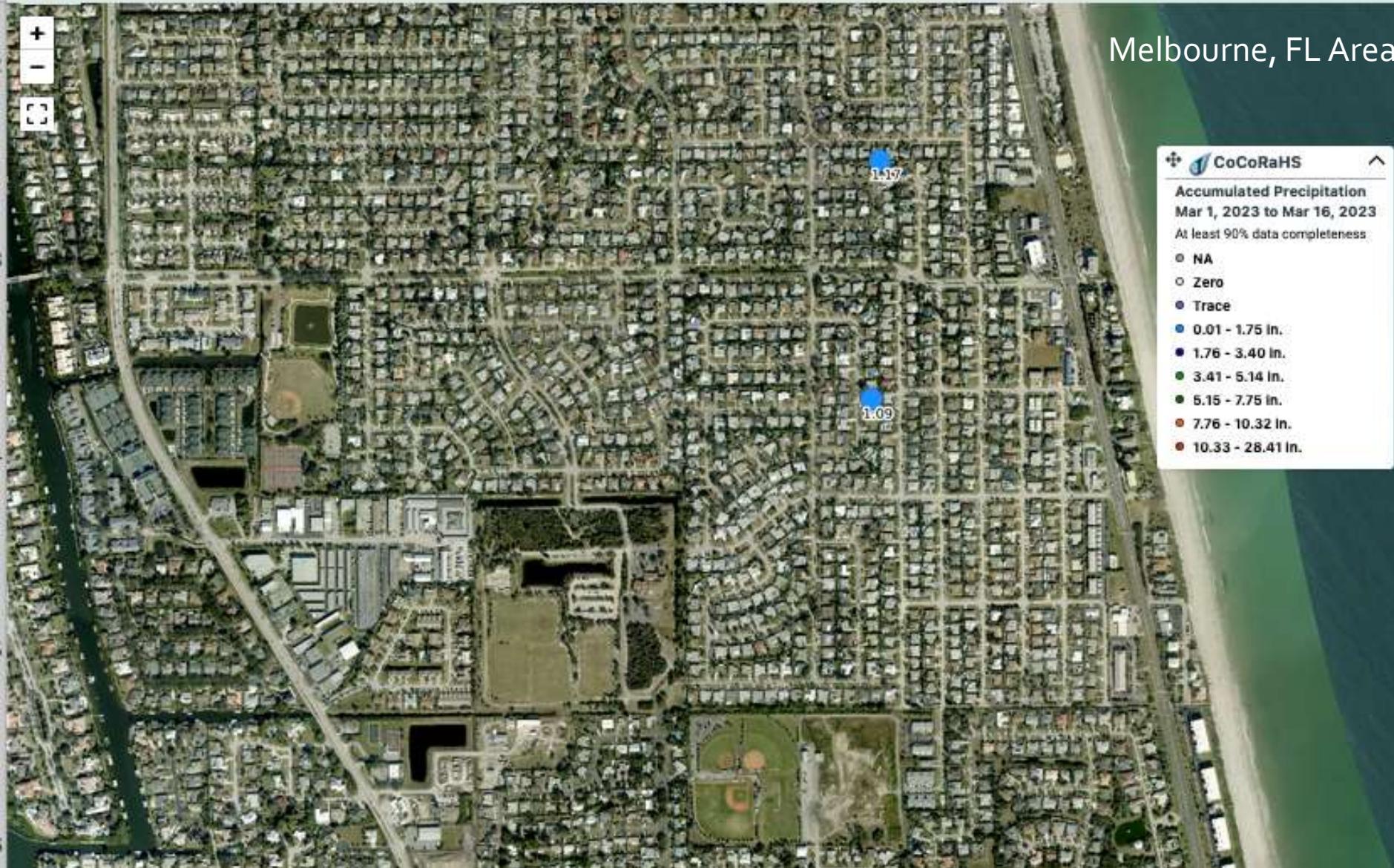
Drill down to the town/city level



CoCoRaHS Mapping System



Melbourne, FL Area





Really zooming in!

Ice Accretion Pilot - 2022

Measuring Ice Accretion



Ice Accretion Pilot Training Guide

New!

[Report impacts](#)

[Submit photos](#)

Install and document a dowel
before an ice event



| Category | Descriptions of Impacts |
|----------|---|
| 0 | No ice or a trace |
| 1 | Enough to be annoying/need scraping off your car. Looks pretty on bushes, shrubs. Dangerous to walk or drive. |
| 2 | Shrubs and other non-native shrubbery weighed down, trees manage ok |
| 3 | Small tree branches start to bend |
| 4 | Small and medium branches bend, a few small branches may fail |
| 5 | Birch trees are starting to bend, minor branch damage to weak trees |
| 6 | Birch trees sag moderately, small and large limbs start to break, ~5-10% branch loss |
| 7 | Birch trees bent nearly completely, ~10-20% branch loss on small and large limbs |
| 8 | Moderate to significant tree damage, most trees have some damage |

Credit: Jason Shafer, Northern Vermont University-Lyndon



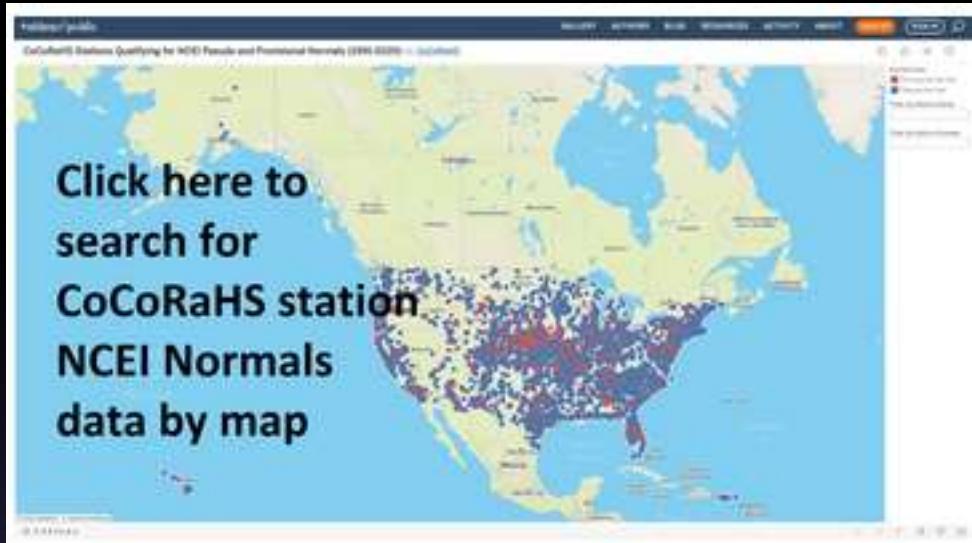
Measure and report ice accretion on branches or other flat objects

Continuing collaboration with NCEI

PSEUDO and Provisional NORMALS

| State | Station | Location | Normals Type | Start Year | End Year | View Normals |
|------------|----------------------|-----------------------|--------------|------------|----------|----------------------|
| All States | All States | | Pseudo | 2007 | 2020 | View |
| AK | Alaska | | Pseudo | 2007 | 2020 | View |
| AL-BT | Alabama | | Pseudo | 2007 | 2020 | View |
| AL-BW | Arkansas | Ilope 2.3 N | Pseudo | 2007 | 2020 | View |
| AL-BW | California | Ilope 1.2 NNW | Pseudo | 2007 | 2020 | View |
| AL-BW | Colorado | Ilope 0.4 SW | Pseudo | 2007 | 2020 | View |
| AL-BW | Connecticut | Ilope 7.4 SW | Pseudo | 2007 | 2020 | View |
| AL-BW | Delaware | Ilope 0.5 ESE | Pseudo | 2007 | 2020 | View |
| AL-BW | District of Columbia | Ilope 3.7 NNW | Pseudo | 2007 | 2020 | View |
| AL-BW | Florida | Ilope 0.4 SSW | Pseudo | 2007 | 2020 | View |
| AL-BW | Georgia | Ilope 2.0 SSW | Pseudo | 2007 | 2020 | View |
| AL-BW | Idaho | Ilope 1.5 SW | Pseudo | 2007 | 2020 | View |
| AL-BW | Illinois | Minnetta 10.9 N | Pseudo | 2007 | 2020 | View |
| AL-BW | Indiana | Minnetta 7.0 N | Pseudo | 2007 | 2020 | View |
| AL-BW | Iowa | Minnetta 5.3 WNW | Pseudo | 2007 | 2020 | View |
| AL-BW | Kansas | Minnetta 1.3 NW | Pseudo | 2007 | 2020 | View |
| AL-BW | Kentucky | Minnetta 7.5 ESE | Pseudo | 2007 | 2020 | View |
| AL-BW | Louisiana | Arab 7.0 S | Pseudo | 2007 | 2020 | View |
| AL-BL-13 | Mississippi | Mertone 6.9 SSE | Pseudo | 2007 | 2020 | View |
| AL-BL-21 | Missouri | Grove Hill 6.1 SW | Pseudo | 2007 | 2020 | View |
| AL-CE-1 | Montana | Tuscaloosa 8.9 SW | Pseudo | 2007 | 2020 | View |
| AL-CK-3 | Nebraska | Muscle Shoals 1.3 SSW | Pseudo | 2007 | 2020 | View |
| AL-CT-1 | North Carolina | Sheffield 1.3 ENE | Pseudo | 2007 | 2020 | View |
| AL-CT-4 | North Dakota | Muscle Shoals 9.7 NNE | Pseudo | 2007 | 2020 | View |
| AL-CT-5 | Ohio | Cullman 4.4 E | Pseudo | 2007 | 2020 | View |
| AL-CT-14 | Oklahoma | Hanceville 1.6 E | Pseudo | 2007 | 2020 | View |
| AL-CM-3 | Pennsylvania | Cullman 7.5 SW | Pseudo | 2007 | 2020 | View |
| AL-CM-4 | South Carolina | Selma 1.5 WSW | Pseudo | 2007 | 2020 | View |
| AL-CM-6 | Tennessee | Sylvania 3.4 ESE | Pseudo | 2007 | 2020 | View |
| AL-DS-1 | Texas | Fort Payne 1.4 WSW | Provisional | 2008 | 2020 | View |
| AL-DK-8 | Utah | | | | | |
| AL-DK-9 | Virginia | | | | | |

Click here to search for CoCoRaHS station NCEI Normals data by list



A total of 5448 CoCoRaHS stations qualified for 1991-2020 climate normals, 4688 for Pseudo-normals and 760 for Provisional normals.

CoCoRaHS data archived daily in NOAA/NCEI's **GHCN-D** (Global Historical Climate Network)

After 100 observations

Examples of Publications using CoCoRaHS Data

Publications Using CoCoRaHS Data

These peer reviewed publications are instances where CoCoRaHS data contributed to the research and were cited in the bibliography:

2022

Joseph, Naveen et al., 2022: [Evaluating the impact of turbidity, precipitation, and land use on nutrient levels and atrazine concentrations in Illinois surface water as determined by citizen scientists](#), The Science of the total environment, 158081. 16 Aug. 2022.

Elmore, K. L., Allen, J. T., & Gerard, A. E., 2022 : [Sub-Severe and Severe Hail](#), American Meteorological Society, Weather and Forecasting, 37(8), 1357-1369.

2021

Spaccio, Jessica, Arthur DeGaetano, and Nolan Doesken, 2021: [COVID-19 Stay-at-Home Orders Result in a Decrease in the Number of Missing Daily Precipitation Observations](#), Bulletin of the American Meteorological Society 102, 3 (2021): 207-209

2020

Goble, Peter E., Nolan J. Doesken, Imke Durre, Russ S. Schumacher, Abigail Stewart, and Julian Turner, 2020: [Strength in Numbers: Daily Precipitation Extremes over CONUS](#), Bulletin of the American Meteorological Society 101, 8 (2020): E679-E682

2019

Smith, Kelly Helm, 2019: [Drought Impacts: Detecting Deviation from Expectation across Space and Time](#). ETD collection for University of Nebraska - Lincoln. October, 2019, AAI27547805.

Spring 2023



CLIMALYTIC™

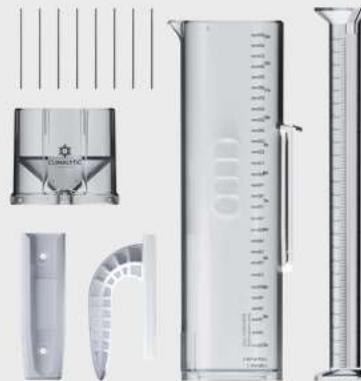
INSTRUMENTS, LLC



TROPO Precipitation Gauge

What's Included

- Handle
- Mounting Bracket
- Bird Deterrent Rods (x8)
- Cap
- Inner Tube
- Outer Tube
- Cable Ties (x2)
- Wood Screws (x2)
- Adhesive Strip
- Instruction Manual

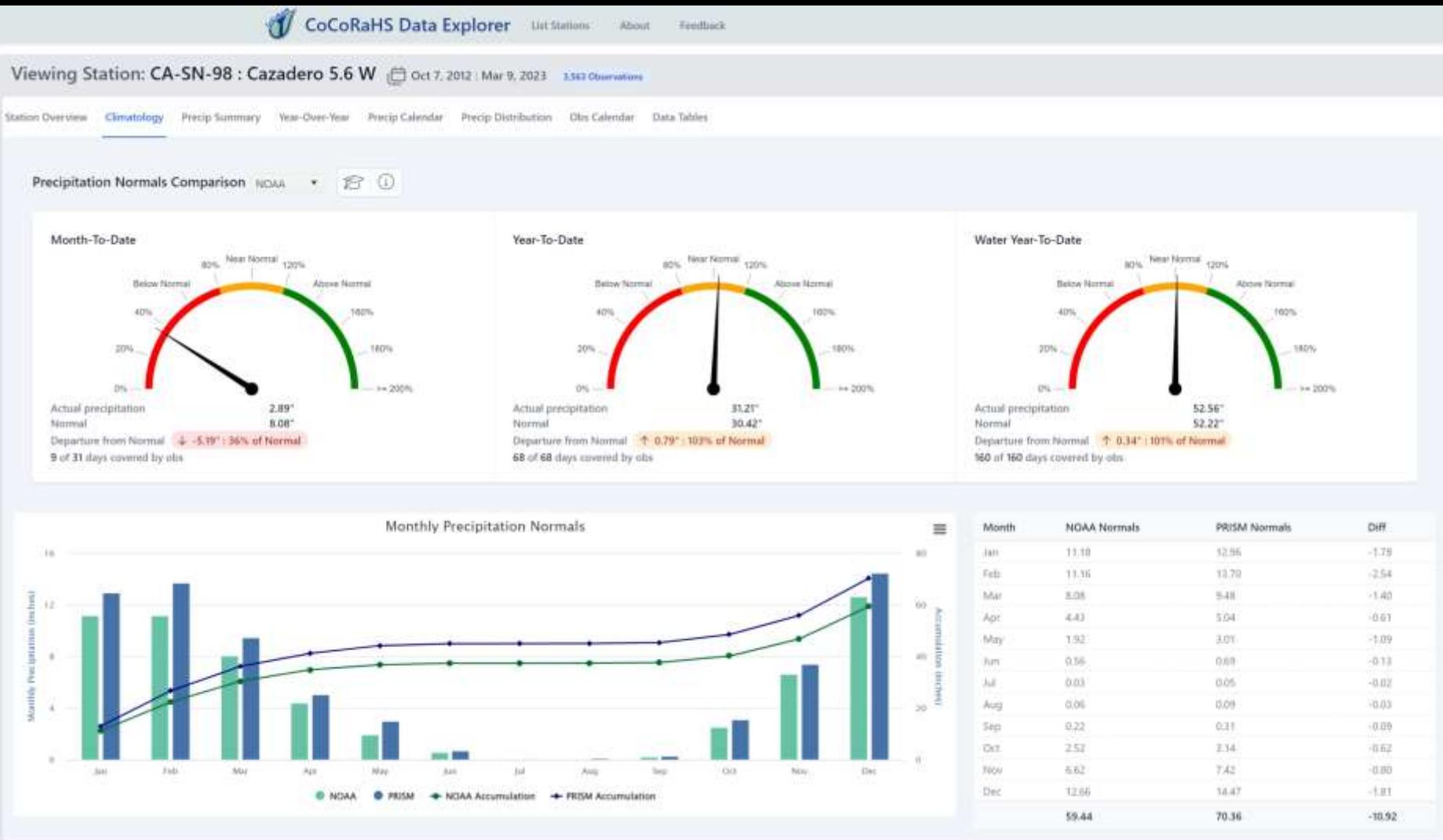


The next generation 4-inch all-weather professional precipitation gauge that meets the accuracy and specification requirements of CoCoRaHS.

<https://climalytic.com/tropo>

CoCoRaHS Data Dashboard

Customized for your individual station



Beyond 2023





Colorado Observer

THANK YOU

For more information visit: www.cocorahs.org
or contact: henry.reges@colostate.edu