

CoCoRAHS

COMMUNITY COLLABORATIVE RAIN, HAIL AND SNOW NETWORK



www.cocorahs.org



**CoCoRaHS is a
grassroots, non-profit,
community-based,
high-density
precipitation network**



**made up of
volunteers of all
backgrounds and ages . . .**



**. . . who take daily measurements of
precipitation right in their own backyards**



JUST PRECIPITATION!



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



4-inch diameter
high capacity rain gauges



Aluminum foil-wrapped
Styrofoam hail pads



Things to know about...

- Rain**
 - Overview
 - Weather Radar
 - Measuring Rain
- Hail**
 - Overview
 - Hail Facts
 - Hail Floures
 - CoCoRaHS & Hail
 - Hail Pad Examples
 - Measuring Hail
- Snow**
 - Overview
 - Measuring Snow

Training is important to assure accurate, high quality data

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

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

5/20/2008 *Observation Date ?

7:00 AM *Observation Time ?

0.59 *Total Rain and Melted Snow in gauge in inches to the nearest hundredth ?

Yes No Report was taken at registered location?

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

It has been so dry, that the cows are now giving powdered milk. Thank God for today's rain!!

New Snow

0.0 Depth of new snow in inches to the nearest tenth ?

NA Melted value from core to the nearest hundredth ?

Total Snow on Ground

NA Depth of total snow in inches to the nearest half inch ?

NA Melted value from core to the nearest hundredth ?

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

[Home](#) | [States](#) | [View Data](#) | [Maps](#) [My Data Entry](#) | [Login](#)

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

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- Donate

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- Training Slide-Shows

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- Distribution/Drop-off
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The Catch

- Message of the Day
- Data Analysis
- CoCoRaHS Blog
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Sponsors

- Presentations
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Key
CoCoRaHS State
State Joining During 2009

Things to know about...

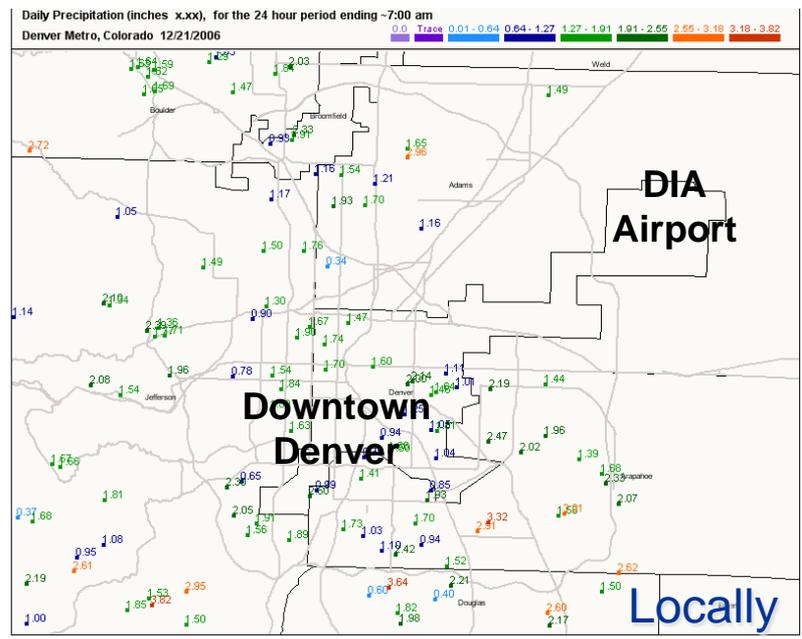
- Rain**
- Hail**
- Snow**

Daily Precipitation (inches x.xx) USA 10/3/2009

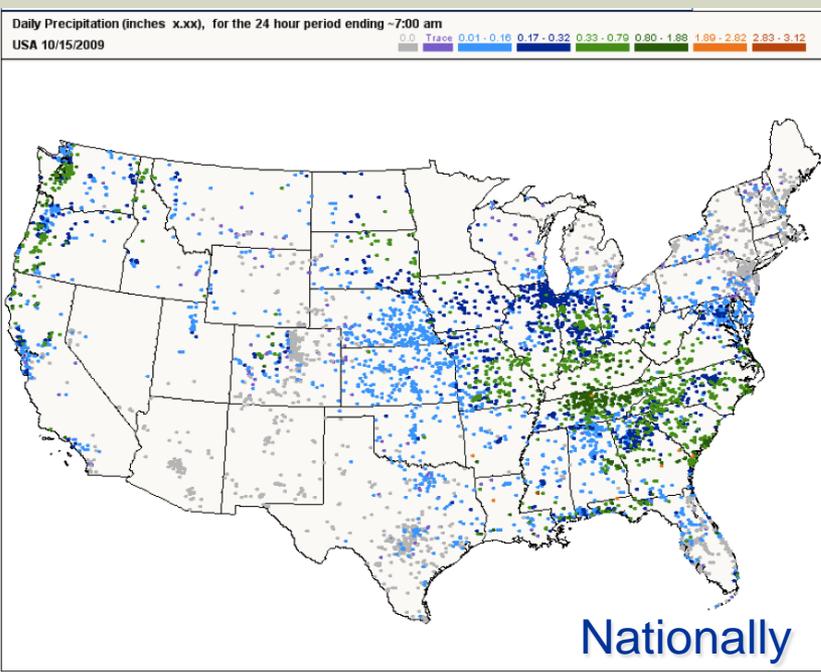
Join CoCoRaHS
[Click Here](#)

TRAINING SLIDE-SHOWS

weatherwise
Read the "CoCoRaHS Article" and find out more about Weatherwise Magazine



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



Date	Time	Station Number	Station Name	Total Precip .Ins	New Snow .in	Total Snow .in	State	County	View
4/29/2008	7:00 AM	RI-WS-3	Ashaway 0.8 ENE	2.35	0.0	NA	RI	Washington	
4/29/2008	7:00 AM	RI-PR-7	Cranston 1.9 E	2.20	0.0	NA	RI	Providence	
4/29/2008	7:47 AM	RI-KN-1	Coventry Center	2.18	0.0	NA	RI	Kent	
4/29/2008	7:00 AM	RI-PR-6	North Providence 0.5 N	1.95	0.0	NA	RI	Providence	
4/29/2008	8:00 AM	RI-BR-1	Warren 1.0 SE	1.84	0.0	NA	RI	Bristol	
4/29/2008	7:00 AM	RI-NW-3	Jamestown 2.6 NNW	1.82	0.0	NA	RI	Newport	
4/29/2008	7:00 AM	RI-NW-4	Middletown 1.1 SW	1.61	0.0	NA	RI	Newport	
4/29/2008	7:00 AM	RI-WS-1	Hope Valley 3.7 S	1.58	0.0	NA	RI	Washington	
4/29/2008	7:00 AM	RI-WS-6	Narragansett Pier 0.5 N	1.48	0.0	NA	RI	Washington	
4/29/2008	7:00 AM	RI-KN-2	East Greenwich 2.3 ESE	1.46	0.0	NA	RI	Kent	
4/29/2008	7:00 AM	RI-WS-2	Westerly 2.8 ESE	1.44	0.0	NA	RI	Washington	
4/29/2008	5:00 PM	RI-PR-2	Cumberland Hill 0.7 E	1.14	0.0	NA	RI	Providence	

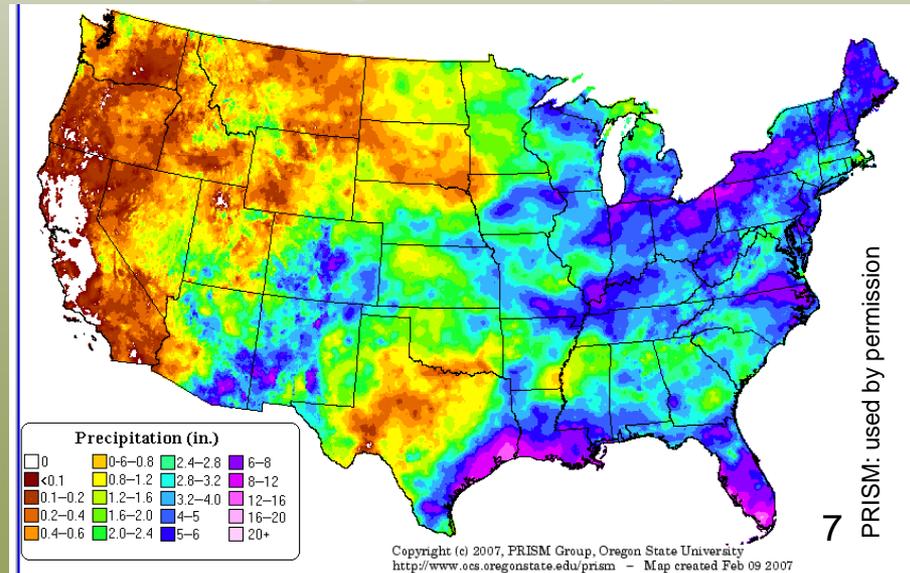
WHY CoCoRAHS ??



1) Precipitation is important and highly variable

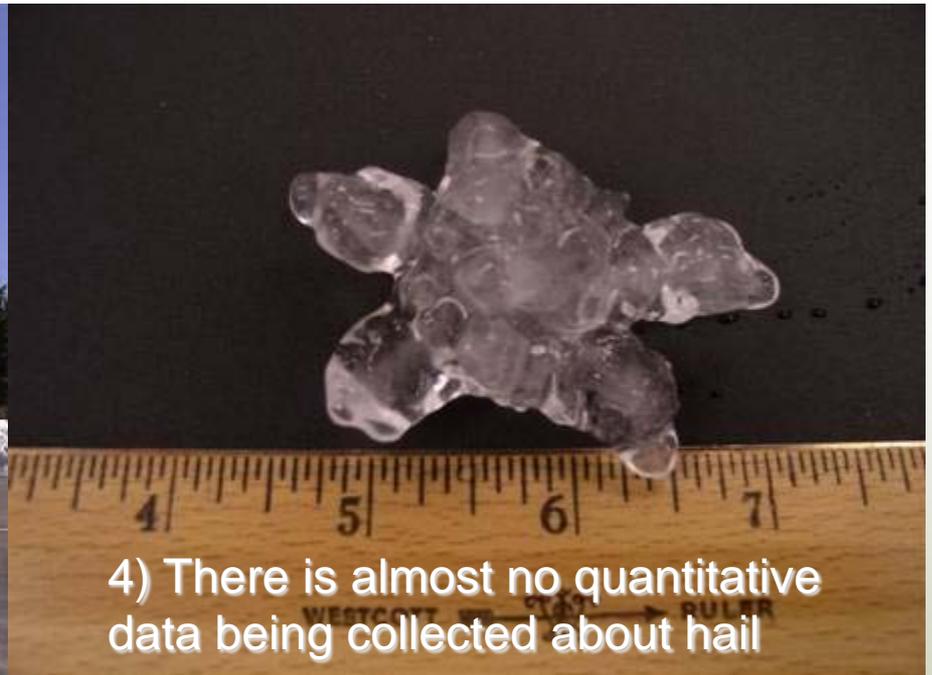


2) Data sources are few and rain gauges are far apart





3) Measurements from many sources are not always accurate (especially snow)



4) There is almost no quantitative data being collected about hail

5) Storm reports can save lives

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
FORT COLLINS COLORADOAN
City death toll at 5; damage in millions

CSU's book losses speak volumes

Rainfall breaks 20 year record

July 30th 1997



A Brief History of CoCoRaHS



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



STORM TOLL

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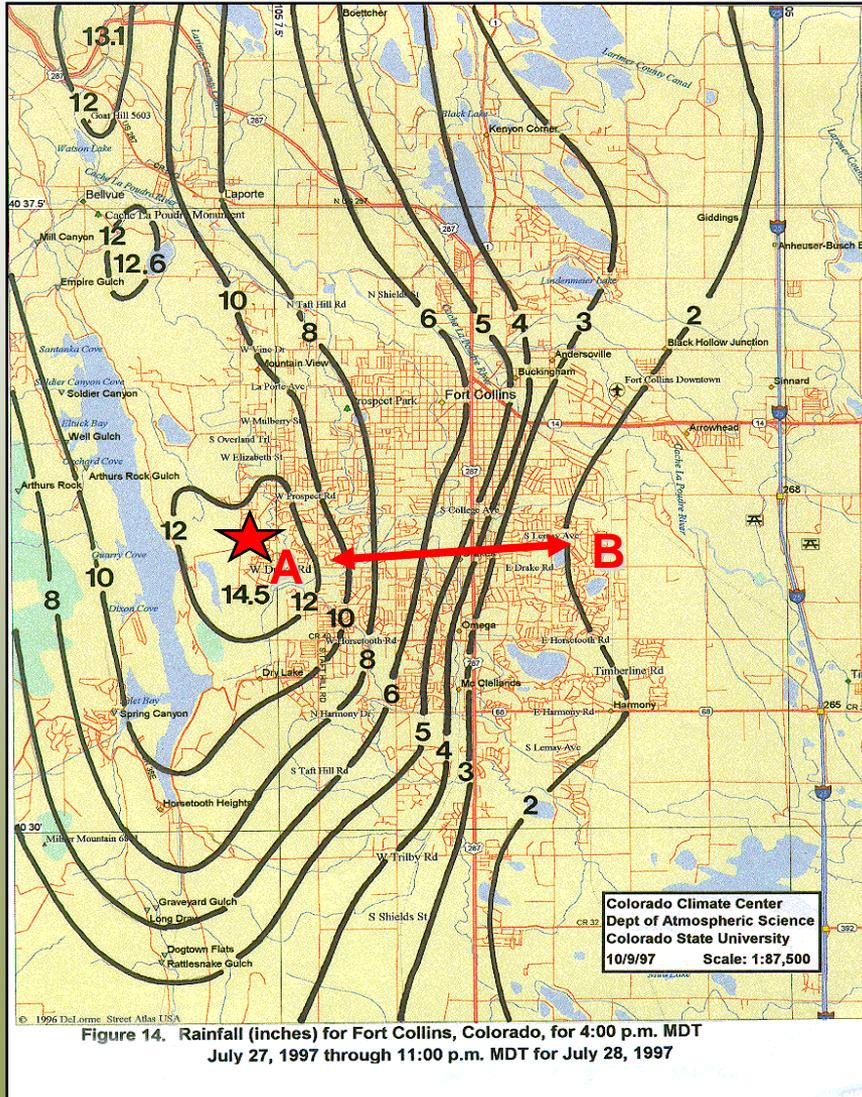
Wednesday



July 30th 1997



The flood pointed out:



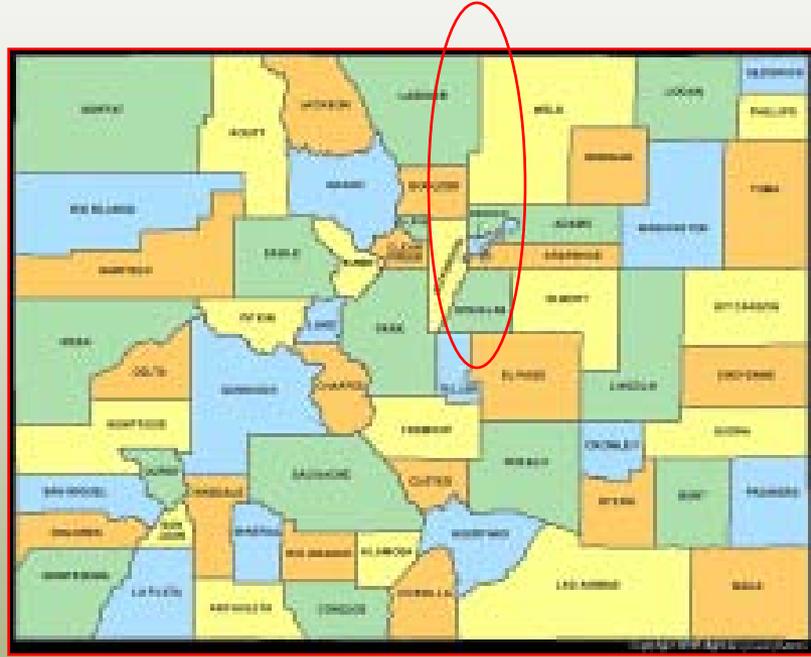
1. the extreme local variations in rainfall possible from convective storms.

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

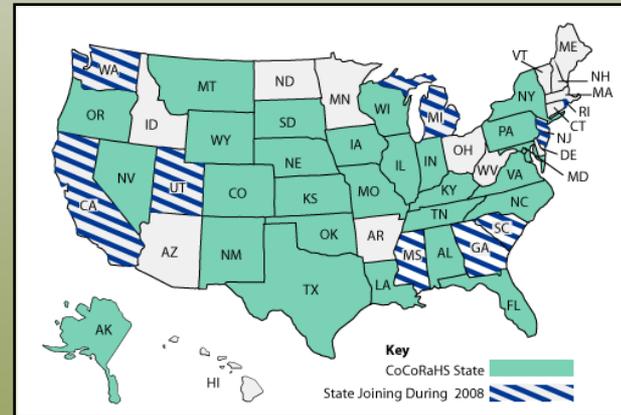
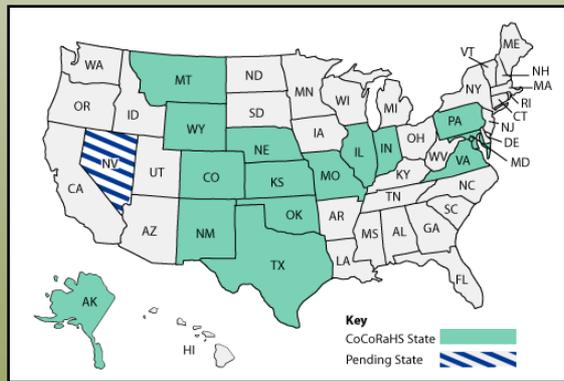
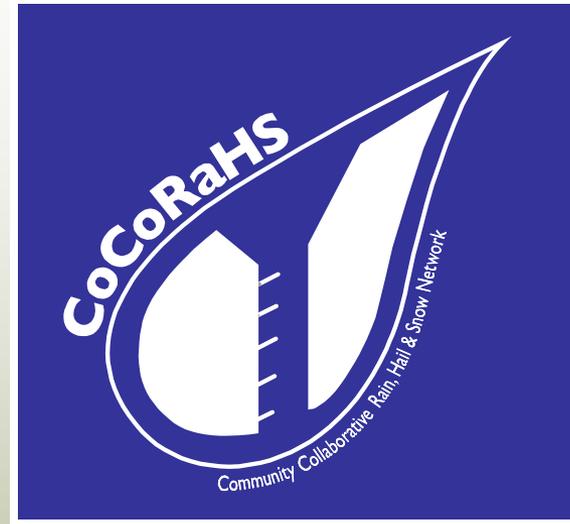


A few dozen volunteers
in Northern Colorado

2007



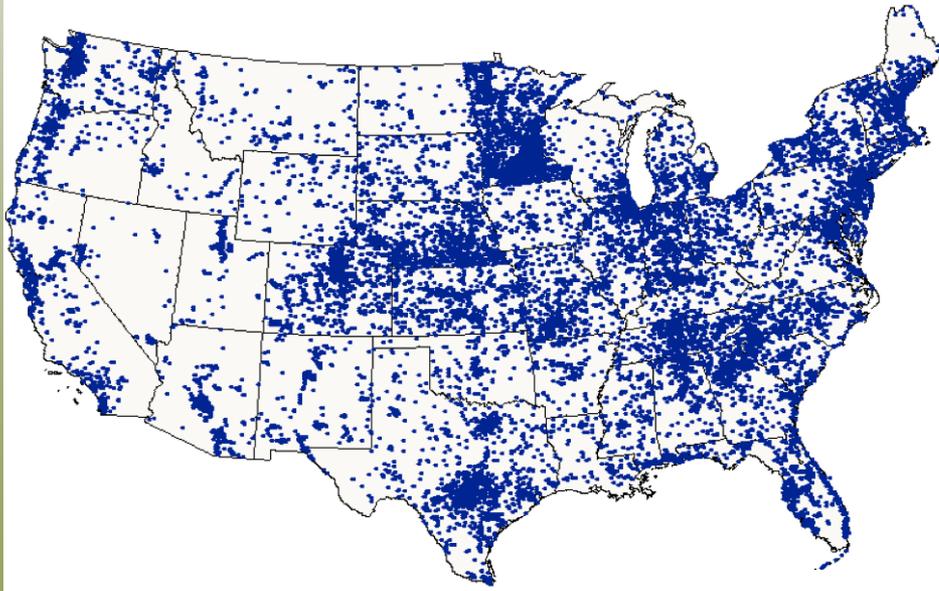
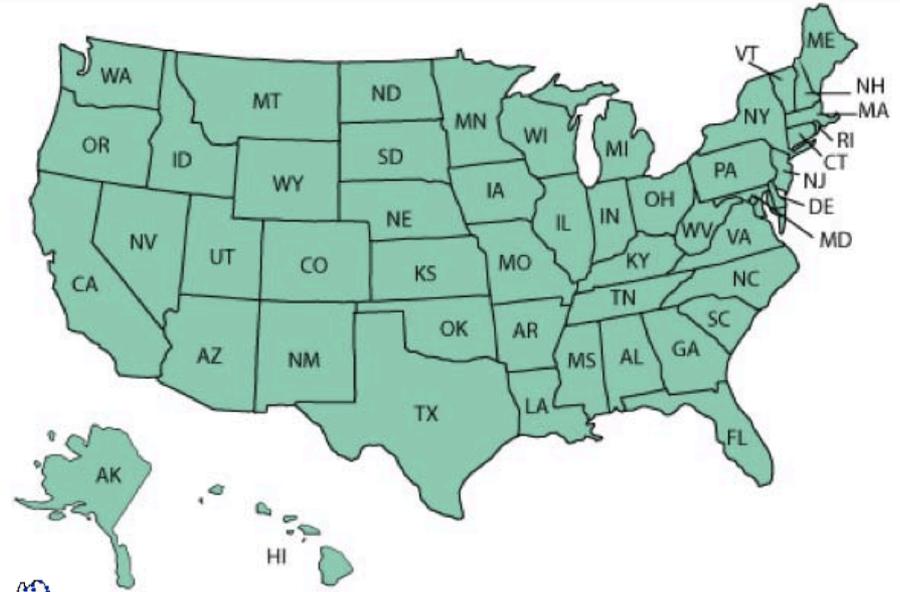
2008



2,500 volunteers in 15 states

7,500+ volunteers in 27 states 13

Today



15,000+ volunteers in all 50 states

And now Canada!

“CoCoRaHS is now the largest provider of daily precipitation observations in the country”

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



one observer **every square mile**
in **urban** areas



one observer **every 36 square miles**
in **rural** areas



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CoCoRaHS Welcomes Canada!

Starting in Manitoba with other provinces to follow in 2012/13

JOIN
CoCoRaHS



Things to know about...

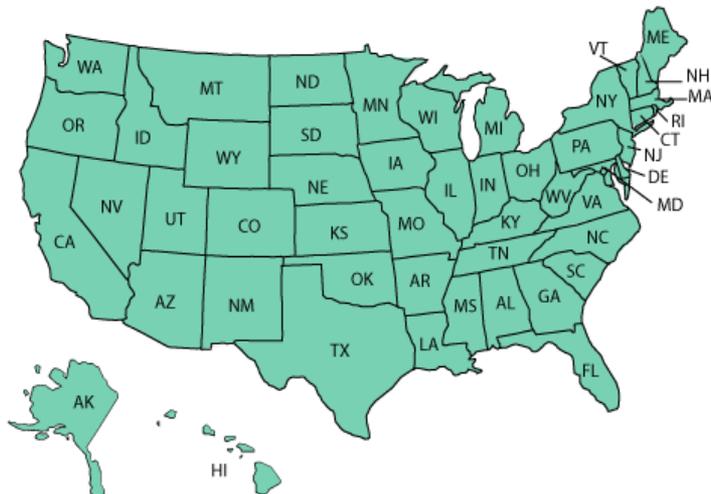
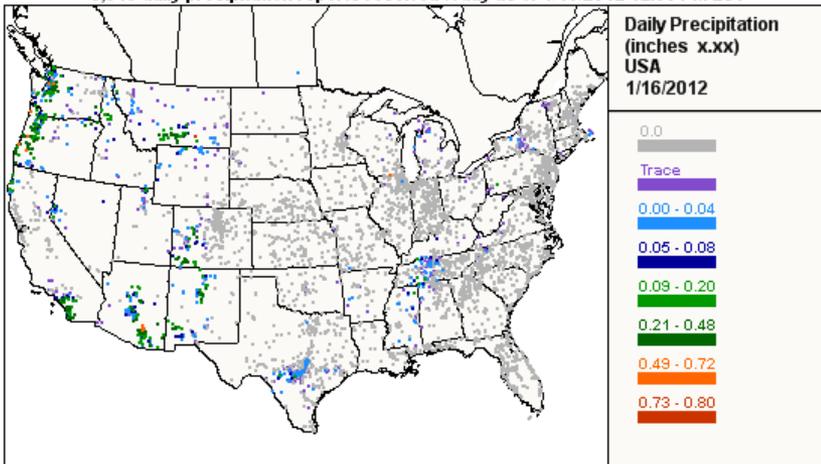
- ☼ Rain
- ⚡ Hail
- ❄️ Snow



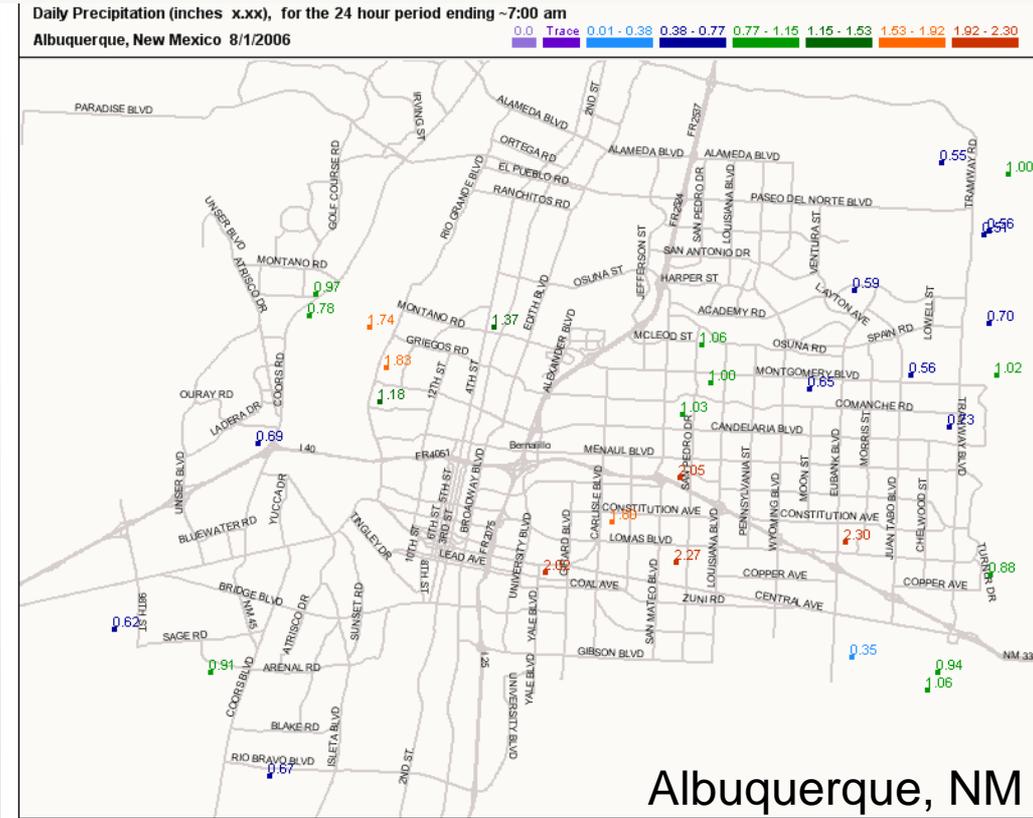
Purchase an official
CoCoRaHS 4" Rain Gauge

"The official CoCoRaHS
Rain Gauge supplier"

5,349 daily precipitation reports received today as of 1/16/2012 12:38 PM EST



CoCoRaHS's main focus is to provide precipitation data . . .



Daily precipitation maps:
Rainfall, Hail and Snowfall

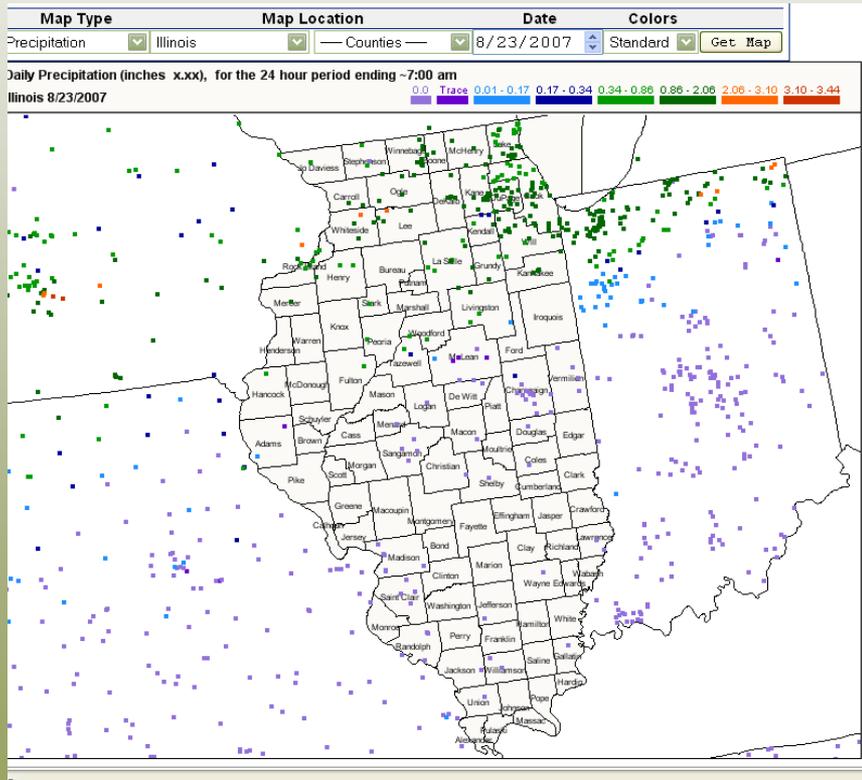
Date	Time	Station Number	Station Name	Total Precip .in	New Snow .in	Total Snow .in	State	County	View
2/14/2007	7:00 AM	MD-GR-1	Mc Henry 4.0 SSE	2.85	6.7	12.5	MD	Garrett	
2/14/2007	11:59 PM	MD-MG-8	Gaithersburg 2 WNW	2.80	4.2	4.0	MD	Montgomery	
2/14/2007	10:00 AM	MD-CR-7	Westminster 1.0 W	2.10	5.5	5.5	MD	Carroll	
2/14/2007	7:40 AM	MD-MG-1	Montgomery Village 1.3 SSW	2.05	4.1	3.0	MD	Montgomery	
2/14/2007	5:44 AM	MD-WH-1	Williamsport 2.8 ENE	1.92	2.6	5.0	MD	Washington	
2/14/2007	7:15 AM	MD-CR-3	Mount Airy 0.2 SE	1.90	5.1	5.0	MD	Carroll	
2/14/2007	7:00 AM	MD-CR-6	Taneytown 3.2 NE	1.83	5.0	NA	MD	Carroll	
2/14/2007	7:00 AM	MD-HW-2	Sykesville 1.7 SSE	1.78	5.0	5.0	MD	Howard	
2/14/2007	7:00 AM	MD-HW-12	Sykesville 2.6 SE	1.61	0.0	NA	MD	Howard	
2/14/2007	8:00 AM	MD-MG-3	Potomac 0.9 NNW	1.54	3.2	NA	MD	Montgomery	
2/14/2007	7:00 AM	MD-MG-2	Redland 0.8 NNE	1.52	4.5	4.5	MD	Montgomery	
2/14/2007	7:00 AM	MD-PG-37	Brandywine 6.7 ESE	1.49	T	T	MD	Prince George's	
2/14/2007	7:00 AM	MD-PG-1	Bowie 0.5 E	1.47	1.0	1.5	MD	Prince George's	
2/14/2007	7:00 AM	MD-SM-3	Leonardtown 0.6 NE	1.42	0.0	NA	MD	St. Mary's	
2/14/2007	7:00 AM	MD-CH-7	Waldorf 3.2 SW	1.40	0.8	0.7	MD	Charles	
2/14/2007	7:00 AM	MD-HW-11	Columbia 1.7 W	1.40	3.2	3.5	MD	Howard	
2/14/2007	7:00 AM	MD-PG-7	Camp Springs 1.6 NNW	1.38	1.8	NA	MD	Prince George's	
2/14/2007	4:00 PM	MD-BL-7	White Hall 3.5 NE	1.38	NA	NA	MD	Baltimore	
2/14/2007	7:00 AM	MD-CV-1	Marion 6.0 E	1.37	0.3	0.0	MD	Calvert	
2/14/2007	7:00 AM	MD-SM-4	Charlotte Hall 3.6 ENE	1.37	0.3	T	MD	St. Mary's	
2/14/2007	7:00 AM	MD-MG-24	White Oak 1.2 N	1.35	2.5	2.0	MD	Montgomery	
2/14/2007	7:00 AM	MD-PG-35	Brandywine 2.5 NNW	1.35	1.0	1.4	MD	Prince George's	
2/14/2007	7:00 AM	MD-WC-1	Vienna 11.3 SSW	1.35	0.0	NA	MD	Wicomico	
2/14/2007	7:00 AM	MD-PG-6	Friendly 1.0 N	1.32	2.4	1.8	MD	Prince George's	
2/14/2007	7:00 AM	MD-MG-5	North Laurel 1.0 SE	1.31	3.1	3.5	MD	Montgomery	

Daily data
in table form

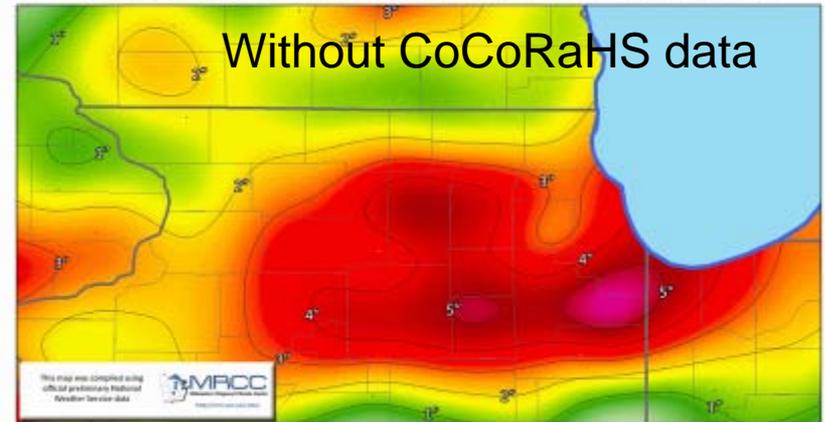
This data allows CoCoRaHS to supplement existing networks and provide many useful results to scientists, resource managers, decision makers and other end users on a timely basis.

CoCoRaHS helps provide a finer mesh of data by supplementing other networks.

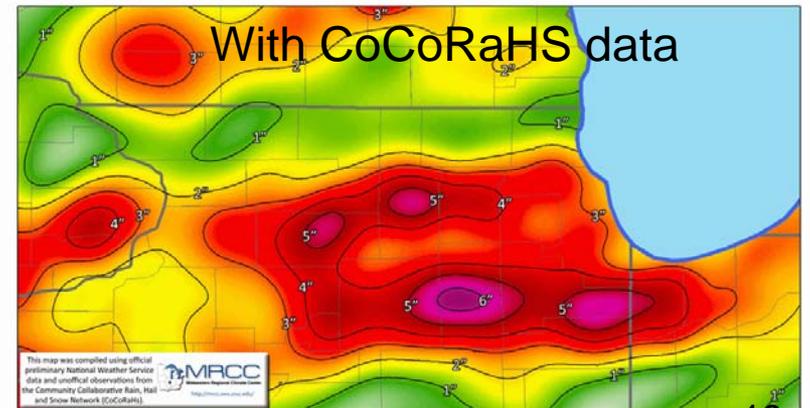
“It’s like increasing the number of pixels on your digital camera. You get a much clearer picture!”



(A) August 23 & 24 Accumulated Precipitation



(B) August 23 & 24 Accumulated Precipitation



Snow Data

CoCoRaHS



In many cases radar doesn't measure snow well, while satellite-based products have many limitations.

With our local volunteers CoCoRaHS is providing additional "winter weather" measurement capabilities in many states across the country.

In some Colorado cities, there is approximately one CoCoRaHS observer per sq. mile.



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

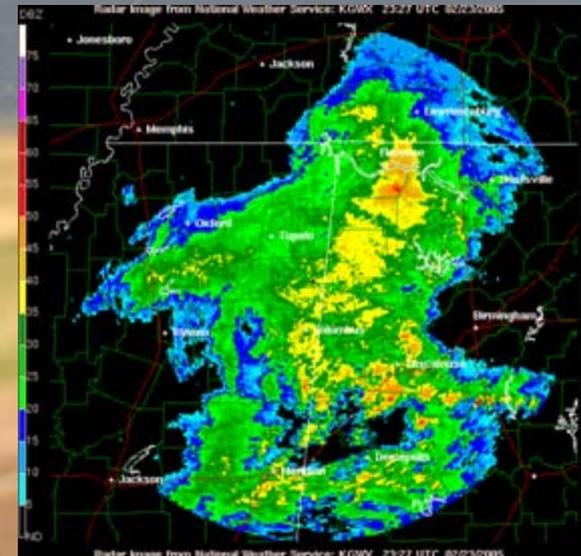
Hail Data



CoCoRaHS has become the largest
Repository of hail data in the US.

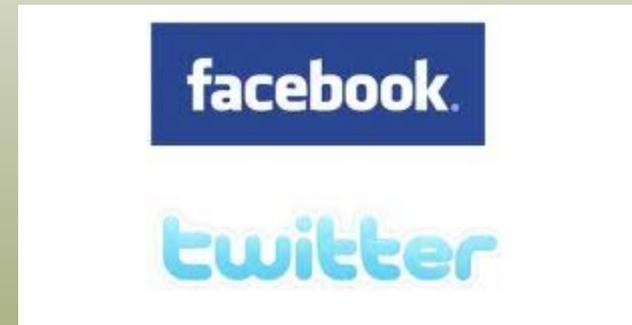
CoCoRAHS DATA ARE USED BY MANY

- National Weather Service
- Other Meteorologists
- Hydrologists
- Emergency Managers
- City Utilities
 - Water supply
 - Water conservation
 - Storm water
- Insurance adjusters
- USDA—Crop production
- Engineers
- Scientists studying storms
- Mosquito control
- Farm Service Agency
- Ranchers and Farmers
- Outdoor & Recreation
- Teachers and Students
 - Geoscience education tool
 - Taking measurements
 - Analyzing data
 - Organizing results
 - Conducting research
 - Helping the community



Our other main focus is educational opportunities

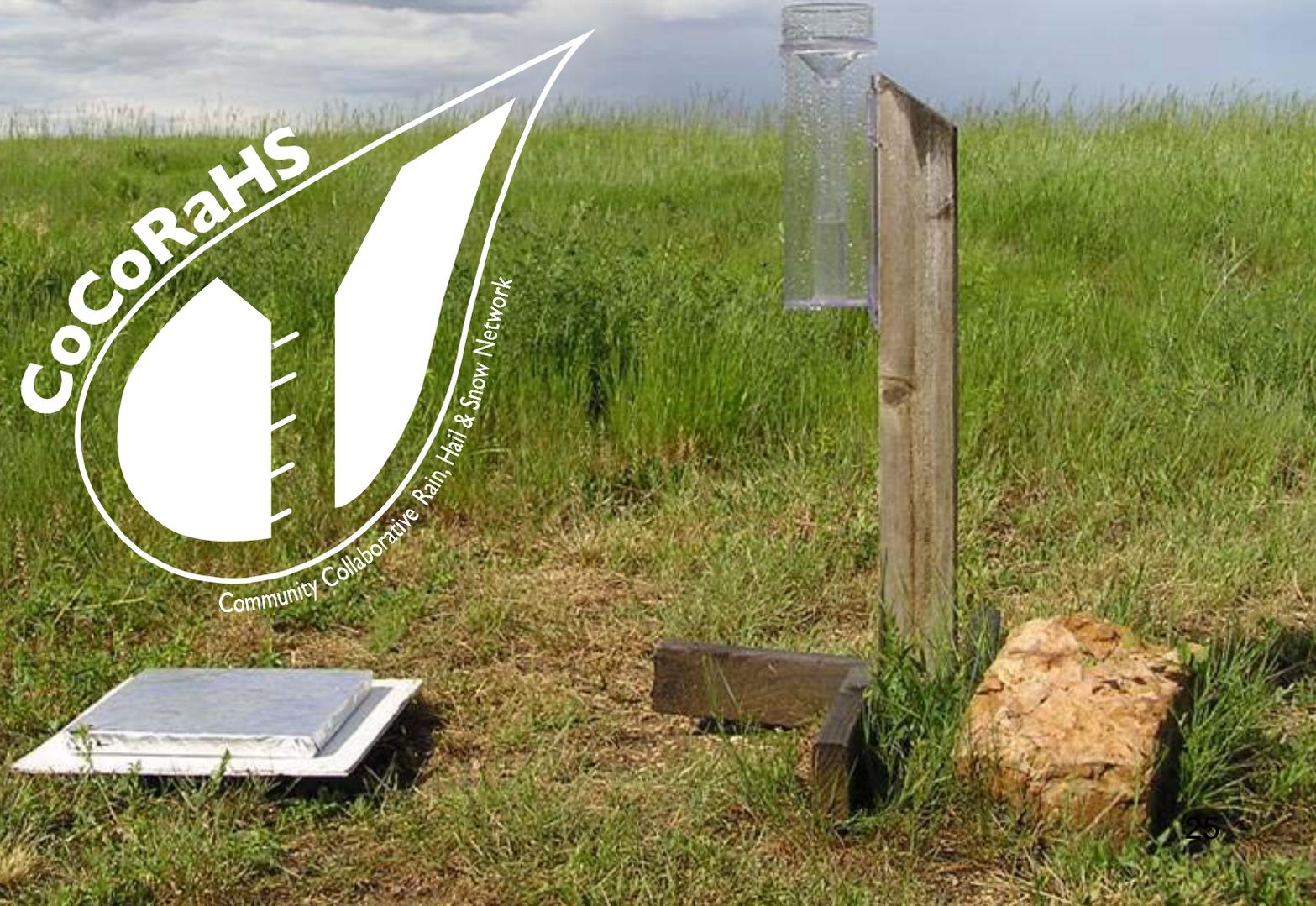
The screenshot shows the CoCoRaHS website interface. At the top, there are four green buttons: "CoCoRaHS Schools Home Page", "For Teachers", "For Sponsors", and "For Mentors". Below these, a text block reads: "Public, private and home schools are now joining 'CoCoRaHS for Schools'!". A video player is embedded with a play button and the text "View this video and then click on 'For Teachers' above for tips on getting started, FAQ's, training materials, lesson plans and more!". Below the video is a cartoon illustration of a man at a podium with a "CSU" sign, pointing to a screen showing a weather diagram. At the bottom left is a blue character with a yellow rain hat. At the bottom right is a green starburst with the word "COLLABORATE!!!". A list of resources is on the left sidebar, including "FAQ / Help", "Education", "Training Slide Shows", "Videos", "Drought Impacts", "Volunteer Coordinators", "Mail Pad", "Distribution Drop-off", "Help Needed", "Printable Forms", "The Catch", "Message of the Day", "Data Analysis", "CoCoRaHS Blog", "Web Groups", "State Newsletters", "Master Observer Guide", "State Climate Series", "Sponsors", "Links", and "CoCoRaHS Store". The browser's address bar shows "www.cocorahs.org/Content.aspx?page=CoCoRaHS_Schools".



NOW RECRUITING A YOUNGER, MORE DIVERSE AUDIENCE.

NOT JUST DATA PROVIDERS, BUT DATA ANALYSTS AS WELL.

CoCoRaHS and Climate Literacy?



The Essential Principles of Climate Sciences

Principle 5: Our understanding of the climate system is improved through observations, theoretical studies, and modeling.

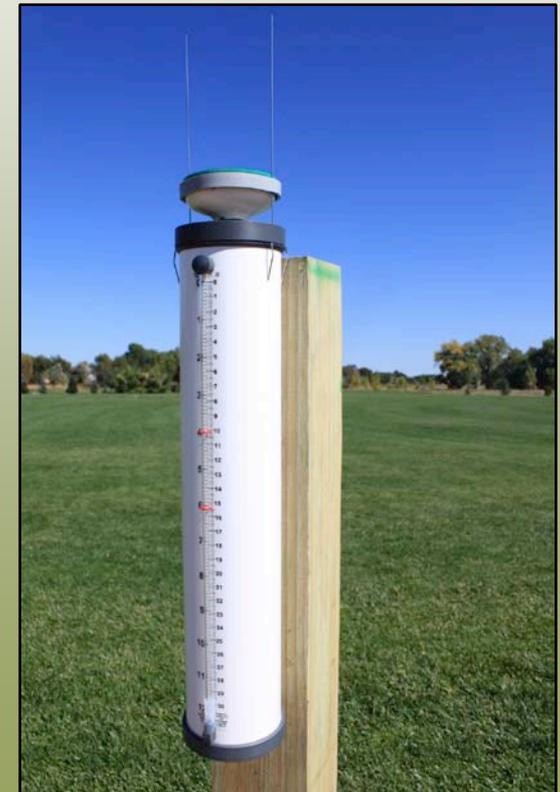
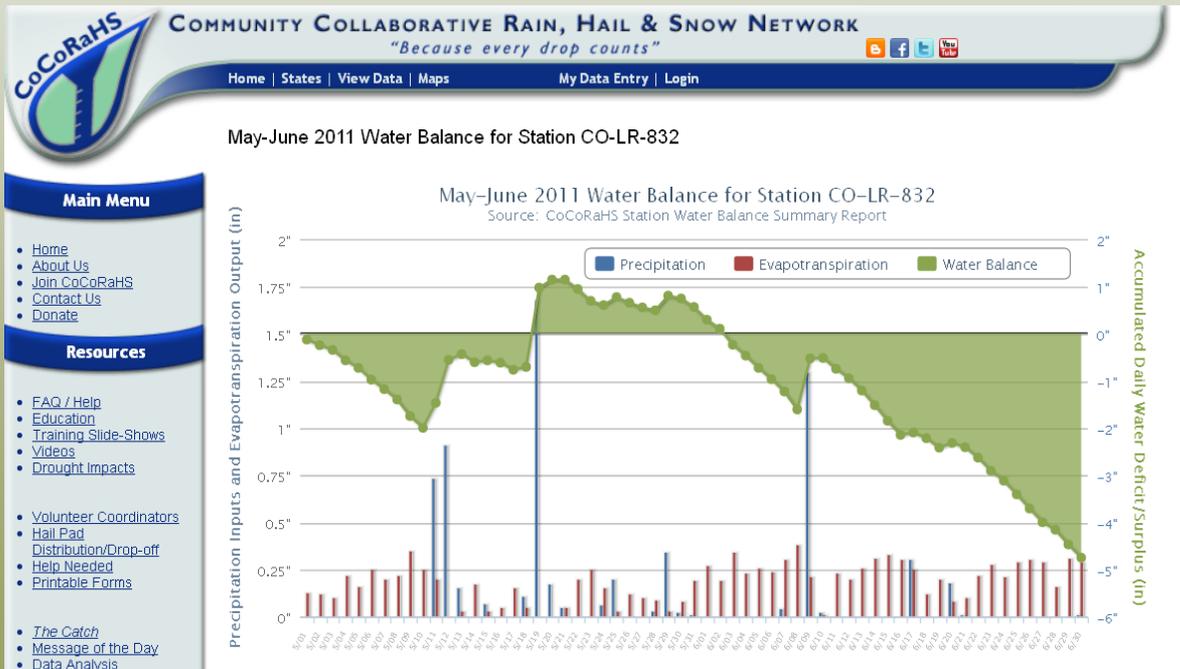
i.e. Understanding through observing

Volunteers learn Quickly

- How it 'looked' vs. what fell in the gauge
- Local variability is almost always present
- Weather vs. Climate
- Their data are valuable, including zero's
- The longer they participate, the more useful their data become
- Looking beyond your own back yard
- Myth's dispelled
 - 10:1 snow ratio
 - It rains the same amount everywhere

Water Cycle

- Tracking rainfall is only one part
- Introducing Evapotranspiration (ET) helps complete the picture.

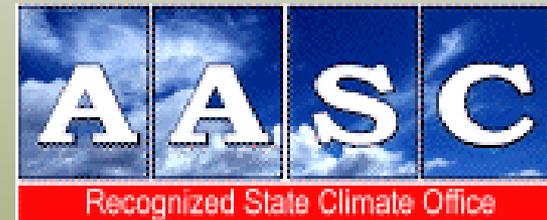
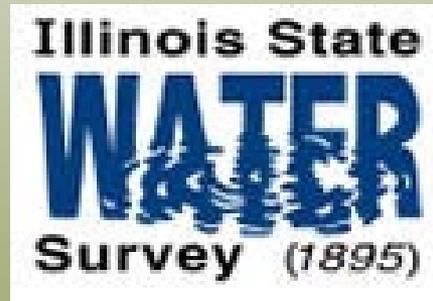


Coming Soon

- New/Improved Mapping capabilities
 - ‘Bing/GoogleEarth’ based
 - Toggle english/metric units
 - Accumulated precipitation
- Even More
 - Improved QC via comparison to gridded data
 - Comparisons to climate normal's (1981-2010 averages).

Collaboration with national and local agencies

- Volunteer state and regional coordinators from NOAA, BLM, State Climate Offices
- Over 200 volunteer state coordinators – all weather, climate and water professionals



Informal Partnerships with many organizations

GLOBE, CSMATE,
EARTHWORKS,
UCAR, COMET

National Phenology Network

Federal and State
Government Agencies

School Districts

Cooperative Extension:
4-H and Master Gardeners



TV Stations

Watershed protection organizations

Water and Power Utilities

NCAR

Climate Literacy Network

Resource Conservation
And Development

NOAA, NWS

Other Universities

CoCoRaHS also hosts fun outreach events where scientists and observers can interact face to face



HOW CAN YOU BECOME PART OF THE NETWORK?



Five easy steps

*Simply sign-up on the
CoCoRaHS web page
www.cocorahs.org*

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

*View the “training slide show” or
attend a training session*

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

*Start observing precipitation
and report on-line daily*



Just 5 minutes a day!

It's easy and fun!

We're Cuckoo For CoCoRaHS!

www.cocorahs.org

