



Training Slide Show

"Because every drop counts!"

Special thanks to our grant funders



What is CoCoRaHS?

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



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



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



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

..



4-inch diameter
high capacity rain gauges



Aluminum foil-wrapped
Styrofoam hail pads



Training is important to assure
accurate, high quality data

Things to know about...

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

www.cocorahs.org

Volunteers report their daily observations on our interactive Web site

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

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

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

6,523 daily precipitation reports received today as of 11/8/2011 2:35 PM EST

Main Menu

- Home
- About Us
- Join CoCoRaHS
- Contact Us
- Donate

Resources

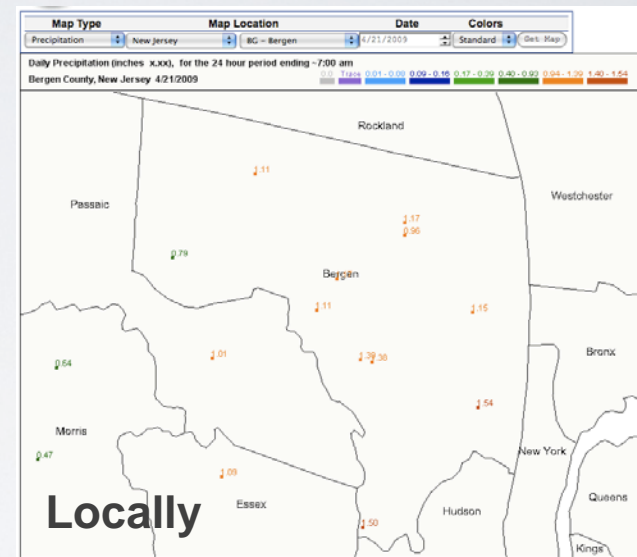
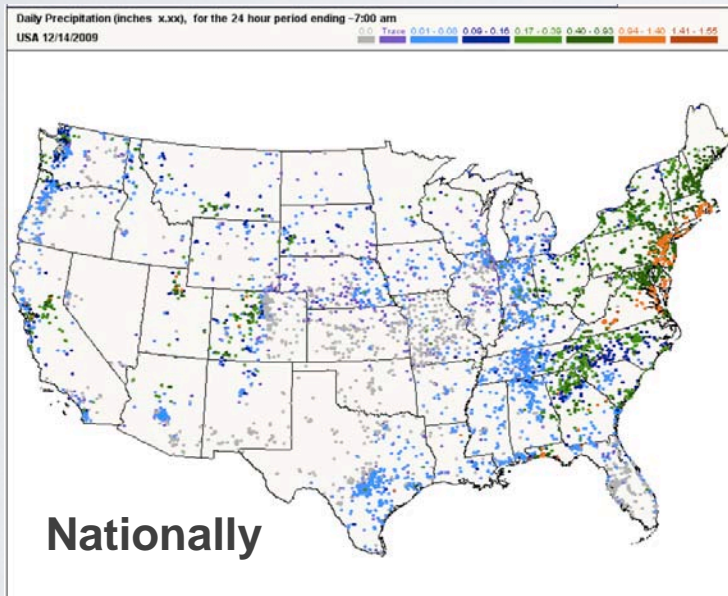
- FAQ / Help
- Education
- Training Slide-Shows
- Videos
- Drought Impacts
- Volunteer Coordinators
- Hail Pad
- Distribution/Drop-off
- Help Needed
- Printable Forms
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- Data Analysis
- CoCoRaHS Blog
- Web Groups
- State Newsletters
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- State Climate Series
- Sponsors
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Daily Precipitation (inches x.xx)
USA
11/8/2011

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Immediately viewable

Volunteers observations are viewable in both map and table form within a few minutes



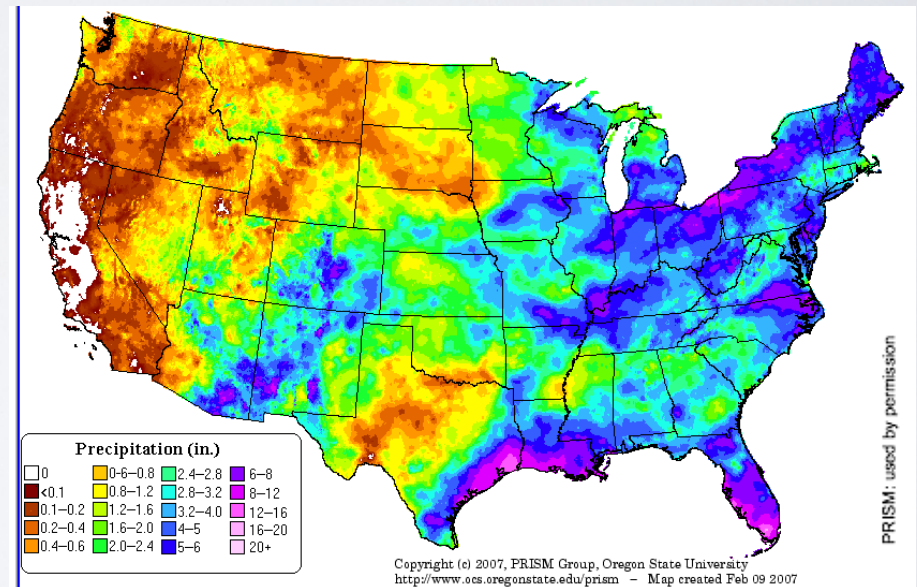
Date	Time	Station Number	Station Name	Total Precip .Ins	New Snow .In	Total Snow .In	State	County	View
4/21/2009	7:00 AM	NJ-HD-1	Harrison 0.3 N	1.86	NA	NA	NJ	Hudson	
4/21/2009	7:00 AM	NJ-OC-4	Little Egg Harbor Twp 0.4 SSW	1.78	NA	NA	NJ	Ocean	
4/21/2009	6:10 AM	NJ-MN-10	Eatontown 1.2 NE	1.57	NA	NA	NJ	Monmouth	
4/21/2009	8:00 AM	NJ-OC-12	Stafford Twp 2.1 NW	1.56	NA	NA	NJ	Ocean	
4/21/2009	9:00 AM	NJ-BG-18	Palisades Park 0.2 WNW	1.54	NA	NA	NJ	Bergen	
4/21/2009	7:20 AM	NJ-BG-15	North Arlington 0.7 WNW	1.50	NA	NA	NJ	Bergen	
4/21/2009	7:00 AM	NJ-MN-6	Red Bank 1.3 NW	1.48	0.0	NA	NJ	Monmouth	
4/21/2009	7:00 AM	NJ-CM-5	Ocean City 1.6 NW	1.41	NA	NA	NJ	Cape May	
4/21/2009	7:20 AM	NJ-BG-8	Saddle Brook Twp 0.3 NNE	1.39	NA	NA	NJ	Bergen	
4/21/2009	7:20 AM	NJ-MD-18	Highland Park 0.2 S	1.39	NA	NA	NJ	Middlesex	

Why CoCoRaHS?

Great question!



Precipitation is important
and highly variable



Data sources are few
and rain gauges are far
apart

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



There is almost no quantitative data being collected about hail



Storm reports can save lives

CoCoRaHS's main focus is to provide:

**Quality Precipitation Data
&
Educational Opportunities**

to help the public better
understand weather and climate



CoCoRaHS observations 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
- Emergency Managers
- City Utilities
 - Water supply
 - Water conservation
 - Storm water



Section One

Setting up your equipment
and measuring
precipitation



In this section we will:

a) Show how/where to place your gauge and hail pad

b) Explain how to measure rainfall

c) Illustrate how to observe hail

d) Show how to measure snow depth and water content



Placement of your gauge

*“Location is the
key to good data”*



Places not to place your gauge



The #1, all time worst place to put your rain gauge is to leave it in the box!

Using your gauge to hold up your gutter downspout is not a wise choice either!

Avoid placing it under trees or any structure



Although convenient, the deck is still too close to the house

Also avoid placing your gauge near:



Sprinklers both big and small Any steep slopes (a bit exaggerated)



Animals (dogs, birds . . .
mountain lions!)



Avoid anything that would artificially increase or decrease your catch gauge



Example: a solid fence

This can cause updrafting during strong winds, which may reduce your gauge catch.

Ideal placement for your gauge



Distance from Obstacles

In open areas strive to be twice as far from obstacles as they are high.

In developed areas strive to be as far from obstacles as they are high.

Distance between Trees

Ideally, place your gauge equidistant from the nearest trees



Height above the ground

In open areas place the gauge top approx. 2 feet off the ground



In developed areas place the gauge top approx. 5 feet off the ground



Level and Bevel

Make sure that your gauge is level



Bevel the top of the post to reduce rain splashing into the gauge



HAIL PAD PLACEMENT



Where should I place my hail pad?

When you have found a good place for your rain gauge, that should be good enough for your hail pad as well.

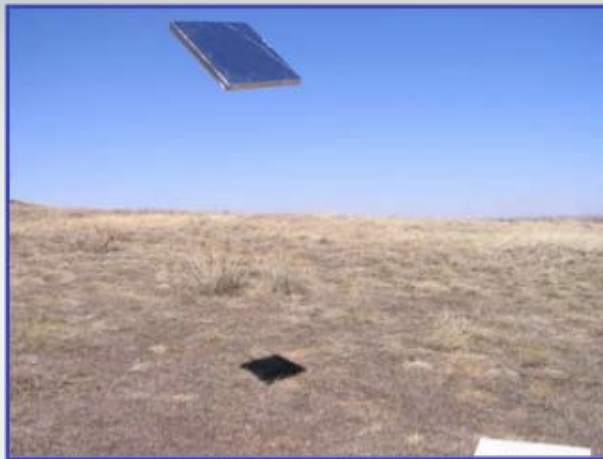
Elevate and Attach your Hail Pad

The pad must be horizontal. It is best, but not necessary to elevate the hail pad.

It should be firmly attached so that . . .



. . . it doesn't blow away!



“when last seen, our hail pad was headed north at 3rd and Elm”

Write the direction the pad is facing on the pad's back, as well as your station number (CO-LR-284)



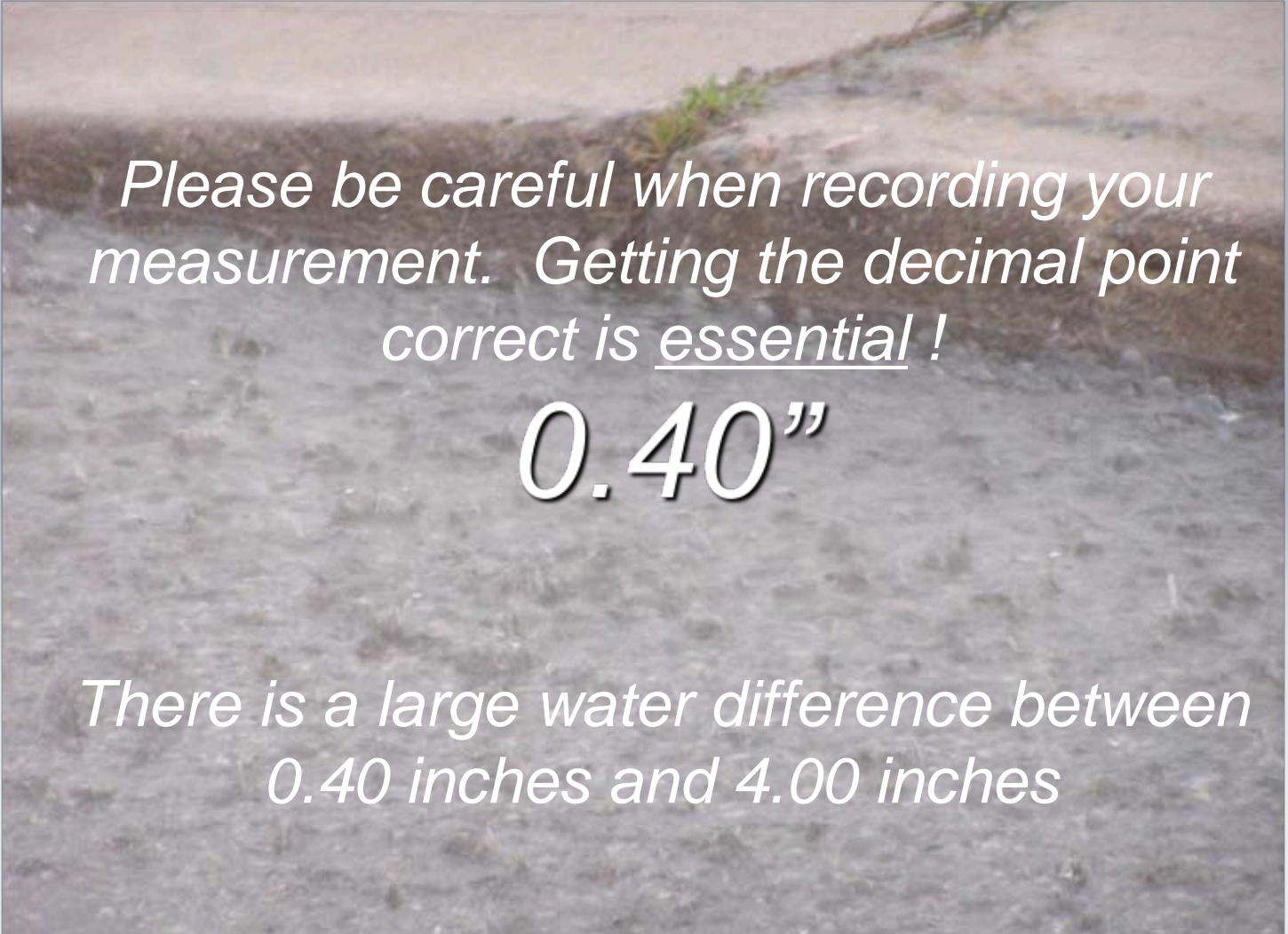
This example shows an "N" for North

Measuring Rainfall with your Gauge

*“Accuracy and
consistency
are very important”*



A Word about Decimals



Please be careful when recording your measurement. Getting the decimal point correct is essential !

0.40"

*There is a large water difference between
0.40 inches and 4.00 inches*

Please do not round up

It is very important to record as accurately to the nearest hundredth of an inch.

Please do not round up to the nearest tenth!

*If you measured **0.98"** please record that amount.
Do not record it as **1.00"***

When should we take our observations?



7:00AM is preferred

Between 5:00AM and 9:00AM is OK

Other times are accepted, but they will not appear on
CoCoRaHS Maps

Reading your Gauge

*Here are the most
common situations you
will encounter*



YOUR MOST COMMON OBSERVATION WILL BE . . .

ZERO 0.00"

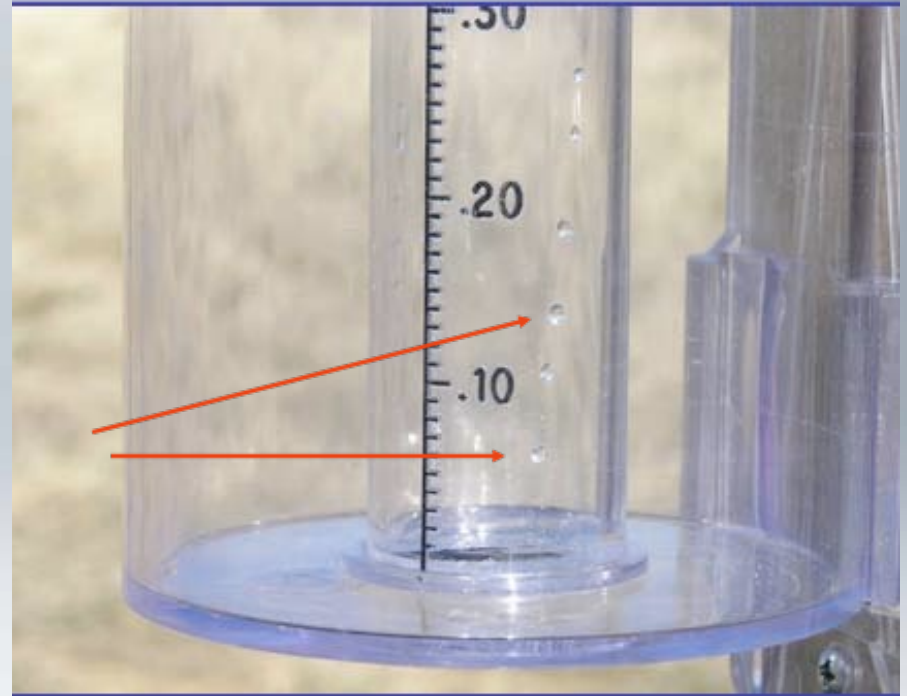
*It is important to know
where it did NOT rain.*

Please report zeros!



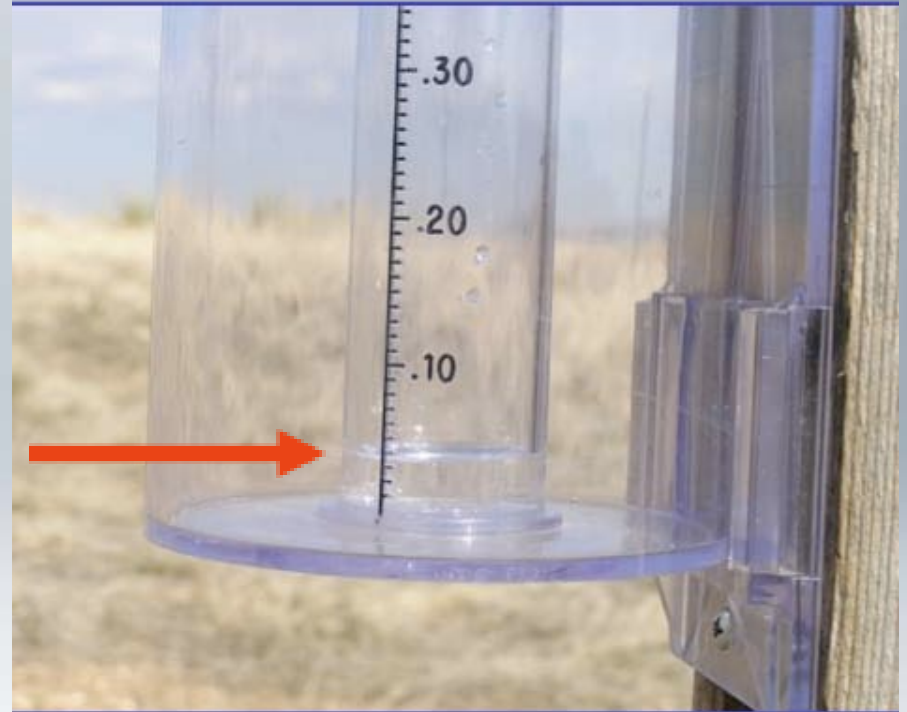
Trace “T”

“When only a drop or two wet the gauge record “T” for Trace



Between “***T***”
and
“***one tenth***”
of an inch

“That’s ***0.04***” or four
hundredths



The Meniscus

The surface of the water in the gauge looks curved.

How do I know where to read?

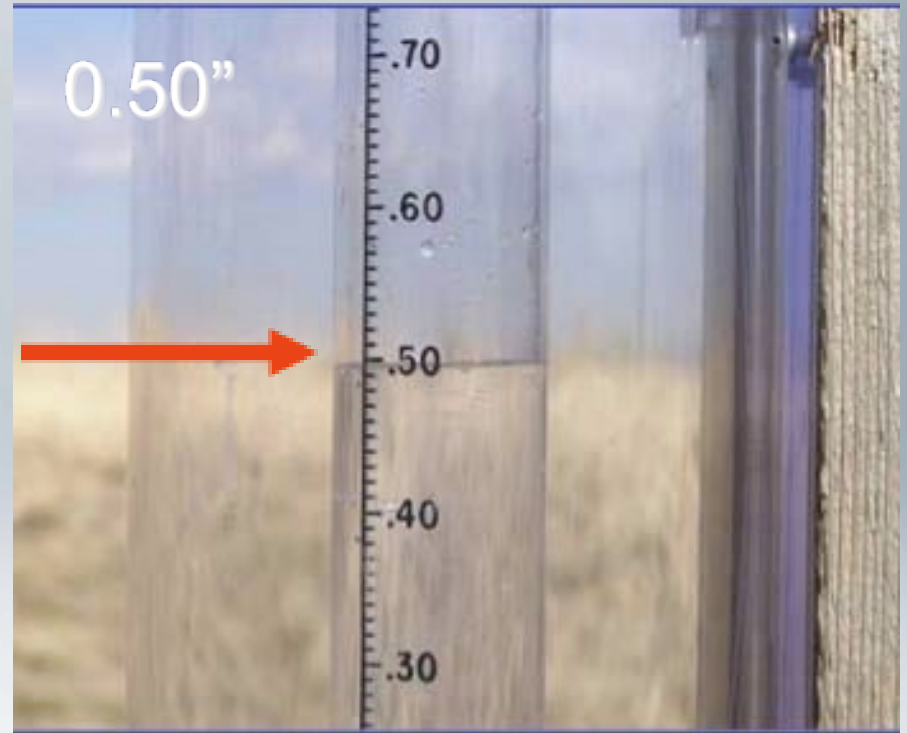
As water fills up the measuring tube, a curved surface is formed called a meniscus. It is formed by the surface tension of a liquid in contact with the sides of the tube.

Always read the bottom of the **meniscus**, when the making your daily rain measurements.



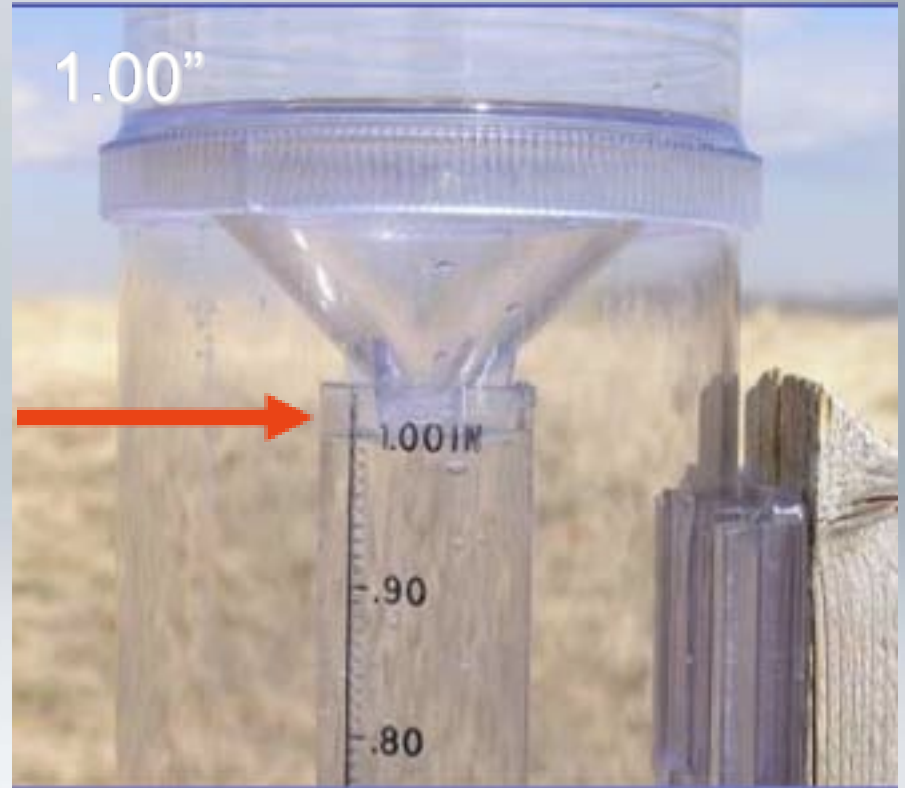
A nice soaking rain

*“This is “one half” inch and
is
recorded as 0.50”*



A really good rain !

“This is “one inch” and is recorded as 1.00”





IF THERE IS VERY HEAVY RAIN OR SNOW FALLING

PLEASE submit a

Significant Weather Report
via the CoCoRaHS website -- ASAP

*Your report immediately goes to
your National Weather Service
Office*

*Your report provides them with
much needed information to
issue severe weather statements
such as flash flood warnings and*

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

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

My Data Entry : Significant Weather Report Form

Enter My New Reports

- Daily Precipitation
- Hail
- Significant Weather
- Multi-Day Accumulation
- Monthly Zeros

List/Edit My Reports

- Daily Precipitation
- Hail
- Significant Weather
- Multi-Day Accumulation

Notification:

- Use this form to report heavy rain or snow that has just fallen, or is still falling.

Significant Weather Report

Station Number : CO-LR-610

Station Name : Fort Collins 3.5 SW

* Denotes Required Field

9/19/2009 *Observation Date

5:15 PM *Observation Time

20 Minutes Time duration that the report covers

Rain

1.25 New Rain and Melted Snow that has fallen during the report duration, in inches to the nearest **hundredth**

1.25 Total Precipitation, rain and melted snow, since storm began, in inches to the nearest **hundredth**

Snow

☐ Depth of New Snow that has fallen during the report duration, in inches to the nearest **tenth**

☐ Total depth of snow and ice on ground at the time of this observation to nearest **half inch**

Lot's of rain !!

When more than an inch of rain falls the precipitation will overflow into the outer cylinder.

The whole gauge has a capacity to hold eleven inches.



To measure greater than one inch . . .



Pour out the first inch from the inner tube and write it down.



Pour the remaining water into the funnel and measure the inner tube.



Continue until all of the water has been measured. Make sure you keep track of your measurements along the way.

Finally add up all of your
measurements

$$\begin{array}{r} 1.00 \text{ inch} \\ 0.97 \text{ inches} \\ 0.88 \text{ inches} \\ + \underline{0.92 \text{ inches}} \\ \text{Total} = 3.77'' \end{array}$$



Observing Hail

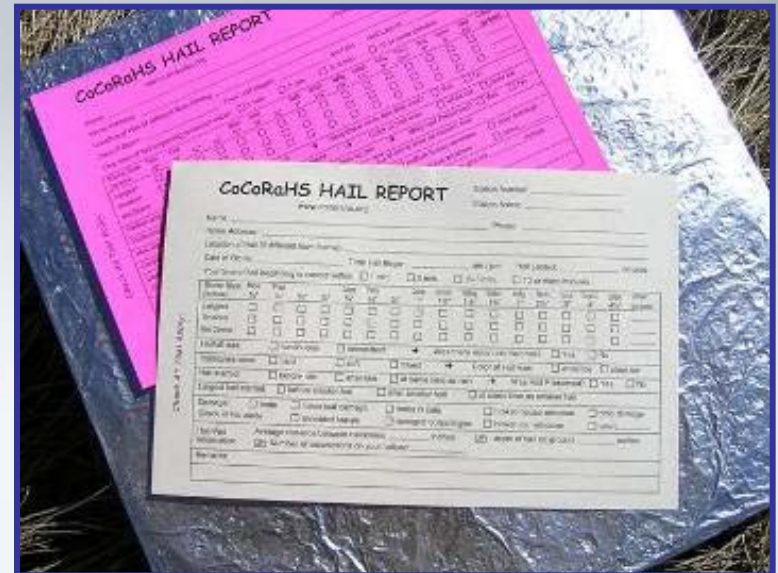


As hail is falling



*Fill out your
“CoCoRaHS Hail Report
Card”*

*After the storm is over
attach it onto the back of
the pad*



If possible submit an

“On-Line Hail Report”


as soon as possible

(a hail pad is not required to submit a report)



*Your report goes right to
the National Weather
Service.*

*It provides them with
much needed information
to issue severe weather*

 **National Weather Service** weather.gov

Watches, Warnings & Advisories

Local weather forecast by "City, St" or zip code City, St

Special Weather Statement

SPECIAL WEATHER STATEMENT
NATIONAL WEATHER SERVICE HOUSTON/GALVESTON TX
225 PM CDT SAT OCT 3 2009

TXZ226-235-032015-
JACKSON-WHARTON-
225 PM CDT SAT OCT 3 2009

...SPECIAL WEATHER STATEMENT...

AT 222 PM CDT...NATIONAL WEATHER SERVICE DOPPLER RADAR INDICATED A STRONG THUNDERSTORM OVER EXTREME NORTHWESTERN JACKSON COUNTY...MOVING EAST SOUTHEAST AT 15 MPH.

HAIL UP TO ONE HALF INCH IN DIAMETER...BRIEF HEAVY DOWNPOURS...ARE POSSIBLE WITH THIS STORM.

After the storm if you have a hail pad



Drop off or send in your hail pad for analysis

In several states you can pick-up a new hail pad at one of our drop-off locations in your community.

If your state is not participating in the hail pad portion of the program you can still order a pad on-line through one of our rain gauge distributors.



Measuring Snow

“Snow is good”
- Nolan Doesken



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



YOU CAN LEARN MORE ABOUT SNOW
MEASUREMENT BY VIEWING OUR
“IN DEPTH” SLIDESHOW ON THE WEB



Section Two

Reporting Observations

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

***Observation Date** ?

***Observation Time** ?

***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 rain last evening. Several tree branches snapped off due to high winds. We sure needed that rain!

New Snowfall

Accumulation of new snow in inches to the nearest tenth ?

Melted value from core to the nearest hundredth ?


Total Snow and Ice on Ground at Observation Time

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

Melted value from core to the nearest hundredth ?

www.cocorahs.org

The CoCoRaHS Web site



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

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

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

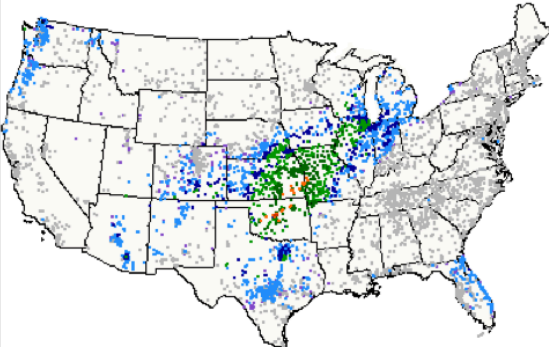
Main Menu

- Home
- About Us
- Join CoCoRaHS
- Contact Us
- Donate

Resources

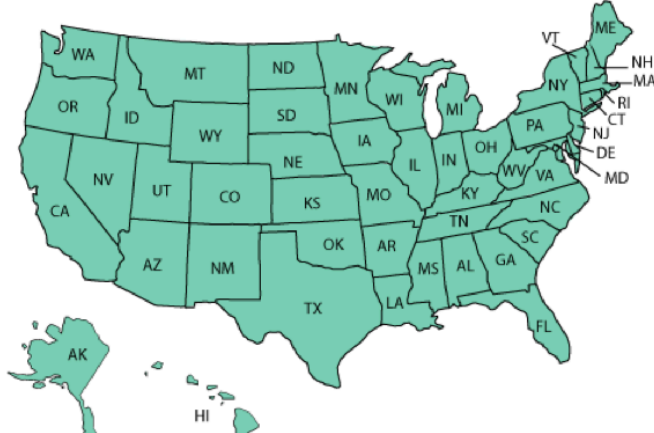
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6,523 daily precipitation reports received today as of 11/8/2011 2:35 PM EST



Daily Precipitation (inches x.xx) USA 11/8/2011




0.0
Trace
0.00 - 0.31
0.32 - 0.62
0.63 - 1.55
1.56 - 3.72
3.73 - 5.58
5.59 - 6.20



JOIN COCORAHHS

TRAINING SLIDE-SHOWS

Things to know about...

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

Purchase an official CoCoRaHS 4" Rain Gauge


"The official CoCoRaHS Rain Gauge supplier"

WEATHERYOURWAY.COM

Fast, Friendly service from a meteorologist and fellow CoCoRaHS Observer

YOUR DAILY “24 HOUR” OBSERVATION

Click on “My data” from the top menu bar



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

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My Data Entry : Daily Precipitation Report Form

Enter My New Reports

- [Daily Precipitation](#)
- [Hail](#)
- [Significant Weather](#)
- [Multi-Day Accumulation](#)
- [Monthly Zeros](#)

List/Edit My Reports

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Precipitation Report Form

[Submit Data](#) [Reset](#)

Station Number : CO-LR-610

Station Name : Fort Collins 3.5 SW

* Denotes Required Field

* **Observation Date**

* **Observation Time**

* **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)

Brief heavy shower over night with gusty winds. Lots of lightning off to the north

New Snowfall

Accumulation of new snow in inches to the nearest tenth


Melted value from core to the nearest hundredth

Total Snow and Ice on Ground at Observation Time

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

Melted value from core to the nearest hundredth

Enter the total precipitation measured in your gauge.
Record your measurement in hundredths (0.00")



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My Data Entry : Daily Precipitation Report Form

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Precipitation Report Form

[Submit Data](#) [Reset](#)

Station Number : CO-LR-610

Station Name : Fort Collins 3.5 SW

* Denotes Required Field

4/27/2009 *Observation Date ?

7:00 AM *Observation Time ?

0.27 *Rain and Melted Snow to the nearest hundredth inch that has fallen in the gauge during the past 24 hours ?
Record your measurement in hundredths (0.00)

☒ Yes ☐ No Report was taken at registered location?

Observation Notes: (This will be available to the public) ?
Brief heavy shower over night with gusty winds. Lots of lightning off to the north

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** ?

You can enter comments under “notes”

These are very helpful to augment your observation

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My Data Entry : Daily Precipitation Report Form

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List/Edit My Reports

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- [Multi-Day Accumulation](#)

Precipitation Report Form

Submit DataReset

Station Number : CO-LR-610

Station Name : Fort Collins 3.5 SW

* Denotes Required Field

* **Observation Date** ?

* **Observation Time** ?

* **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) ?

Brief heavy shower over night with gusty winds. Lots of lightning off to the north

New Snowfall

Accumulation of new snow in inches to the nearest tenth ?

Melted value from core to the nearest hundredth ?

Total Snow and Ice on Ground at Observation Time

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

Melted value from core to the nearest hundredth ?

Submit your report

Click “Submit Data” and your observation is recorded on our site

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

4/27/2009

*Observation Date ?

7:00

AM

*Observation Time ?

0.27

*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) ?

Brief heavy shower over night with gusty winds. Lots of lightning off to the north.

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

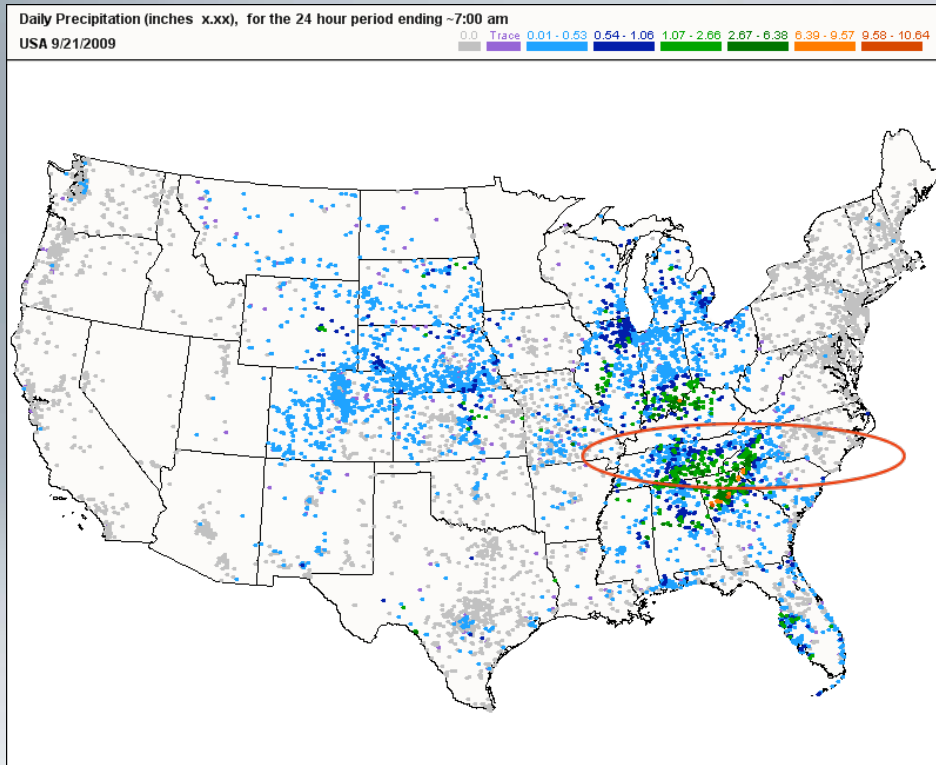
Melted value from core to the nearest hundredth ?

Duration Information

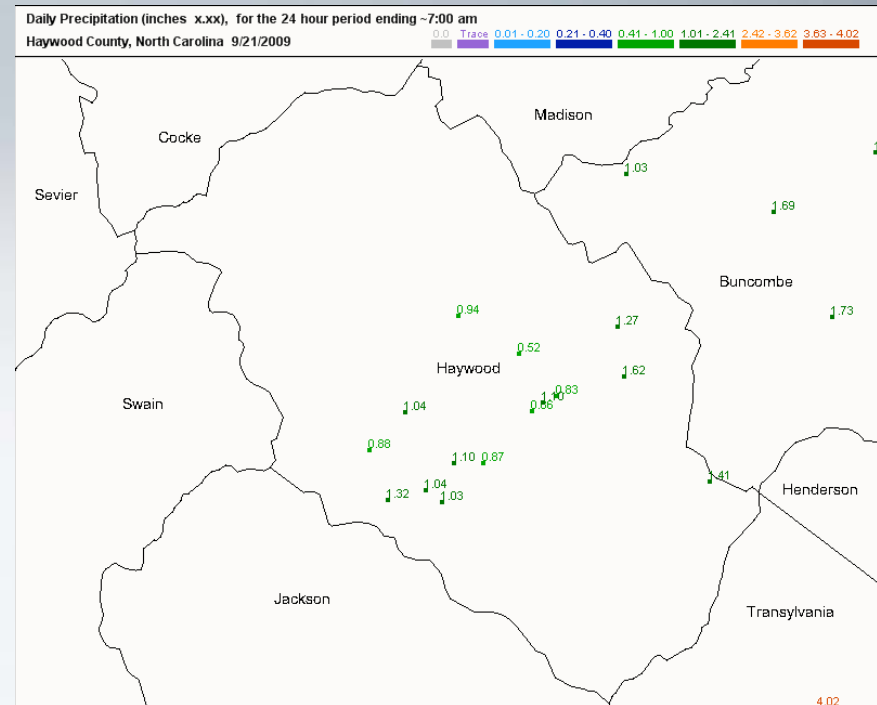
If a time is unknown or the storm has not ended leave it blank.

To see your Observation on our maps

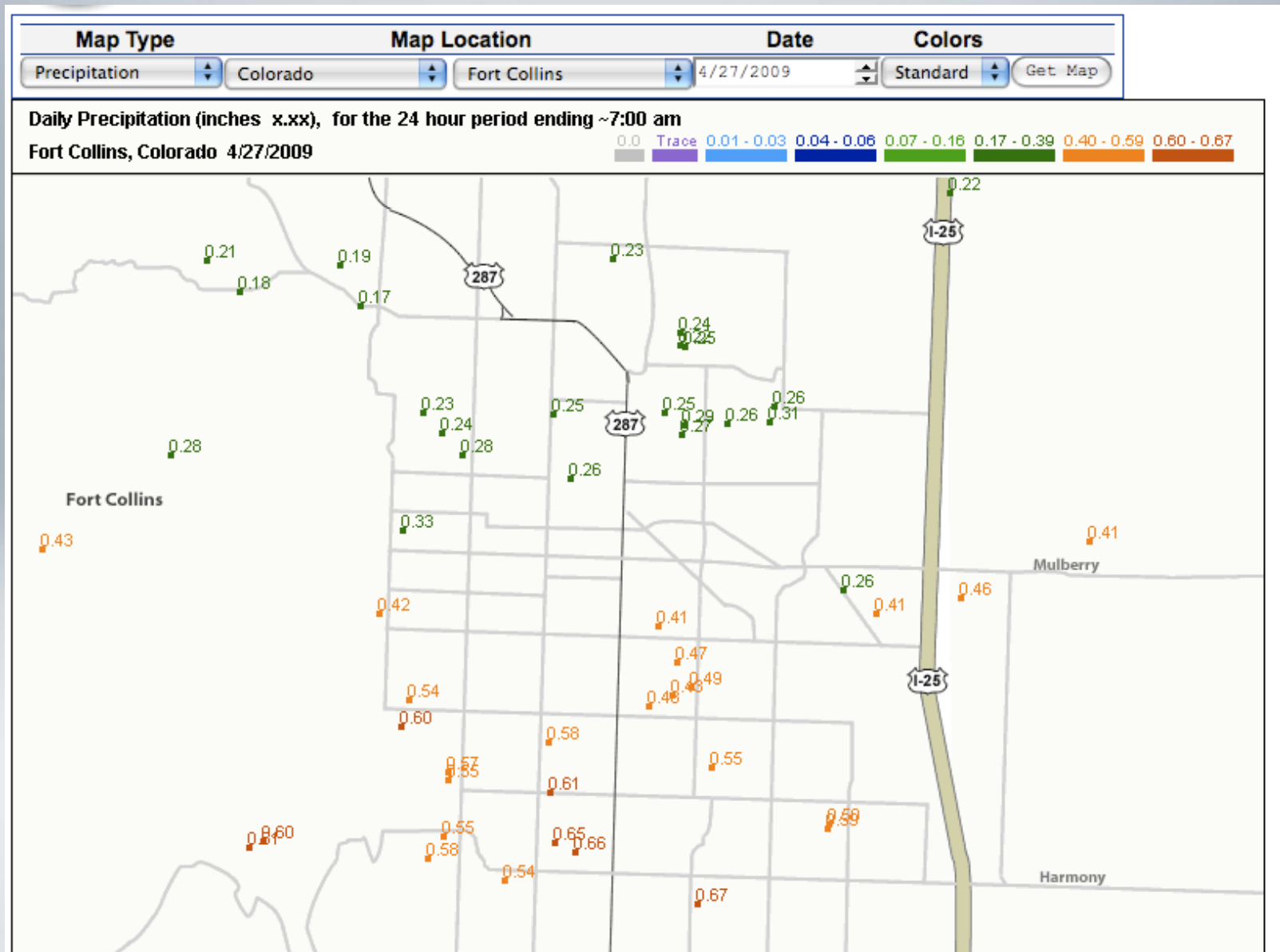
Click on your state from our main page and then click on your county




Observations are available (and sortable) in table form by clicking on “View Data” from the main menu.



A sample map from Fort Collins, Colorado



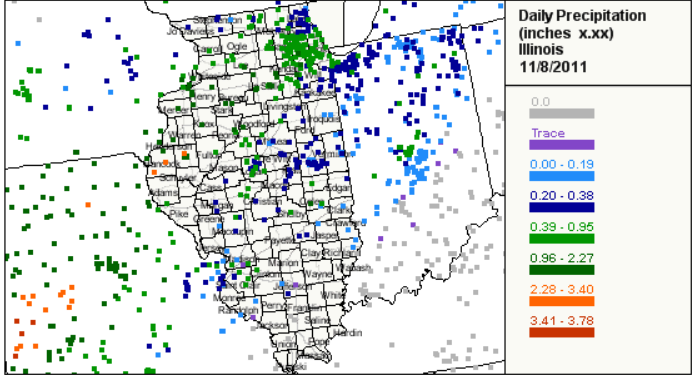
For Info on what is happening in your state
visit your state page



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Illinois



Daily Precipitation
(inches x.xx)
Illinois
11/8/2011

0.0
Trace
0.00 - 0.19
0.20 - 0.38
0.39 - 0.95
0.96 - 2.27
2.28 - 3.40
3.41 - 3.78

[View Large Map](#)

Welcome to CoCoRaHS in Illinois!

New!

[Prairie State Precip](#), the Illinois CoCoRaHS Quarterly Newsletter **Spring 2011** issue

[Background](#)
[What do I need](#)
[How do I join](#)
[How do I obtain a rain gauge](#)

[Find Your Local Coordinator](#)
[Training Session Schedule](#)
[Illinois Participation Map](#)
[Illinois Sponsors](#)

[Measurement Tube Support plans](#)
[Observer's Guide](#)

[Illinois CoCoRaHS Forum](#)
[Illinois Newsletter Archive](#)

[Map of Rainfall in Midwest Sept. 12-15, 2008](#)
[Map of Rainfall in Midwest with Remnants of Hurricane Gustav Sept. 4-7, 2008](#)
[Map of June 2008 Rainfall](#)
[Pocket Hail Size Guide](#)

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Other Important Reports


Hail Report

Significant Weather Report (Rain and Snow)

Monthly Zeros

Multi-Day Precipitation Report

Hail Report



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My Data Entry : Hail Report Form

Enter My New Reports

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- [Multi-Day Accumulation](#)

Hail Report Form

[Submit Data](#) [Reset](#)

Station Number : CO-LR-610

Station Name : Fort Collins 3.5 SW

* Denotes Required Field

***Date of Hail Storm** ?

Time Hail Storm Began ?

☐ Yes ☐ No **Report was taken at registered location?**

Size of hailstones

Smallest:

Average:

Largest:

Hail Lasted

Minutes This time is accurate within

Hailfall was: ☐ Continuous ☐ Intermittent

Hailstones were:

(Check all that apply)

☒ Hard ☐ Soft ☐ Mixed (Hard & Soft) ☐ Clear Ice ☐ White Ice

Was there more rain than hail? ☐ Yes ☒ No


Hail Started:

☒ Before rain ☐ After rain ☐ Same time as rain

Largest Hail Started

Significant Weather Report

(both rain and snow)



COMMUNITY COLLABORATIVE RAIN, HAIL & SNOW NETWORK
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My Data Entry : Significant Weather Report Form

Enter My New Reports

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- [Hail](#)
- [Significant Weather](#)
- [Multi-Day Accumulation](#)
- [Monthly Zeros](#)

List/Edit My Reports

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- [Hail](#)
- [Significant Weather](#)
- [Multi-Day Accumulation](#)

Notification:

- Use this form to report heavy rain or snow that has just fallen, or is still falling.

Significant Weather Report

[Submit Data](#) [Reset](#)

Station Number : CO-LR-610


Station Name : Fort Collins 3.5 SW

* Denotes Required Field

***Observation Date**


***Observation Time**

Time duration that the report covers

 **Rain**

New Rain and Melted Snow that has fallen during the report duration, in inches to the nearest [hundredth](#)

Total Precipitation, rain and melted snow, since storm began, in inches to the nearest [hundredth](#)

 **Snow**

Depth of New Snow that has fallen during the report duration, in inches to the nearest [tenth](#)

Total depth of snow and ice on ground at the time of

Multi-Day Precipitation Form

If you are away on vacation or out of town this is the form for you.

Just put in the dates that you were gone and record what you found in the gauge.

There is no need to file an additional daily report.

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

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

My Data Entry : Multi-Day Precipitation Report Form

Enter My New Reports

- [Daily Precipitation](#)
- [Hail](#)
- [Significant Weather](#)
- [Multi-Day Accumulation](#)
- [Monthly Zeros](#)

List/Edit My Reports

- [Daily Precipitation](#)
- [Hail](#)
- [Significant Weather](#)
- [Multi-Day Accumulation](#)

Multiple Day Accumulation Form

[Submit Data](#) [Reset](#)

Station Number : CO-LR-610

Station Name : Fort Collins 3.5 SW

4/21/2009 First day of accumulation period. This day should be one day after your last report.

4/27/2009 Date the rain gauge was emptied.

8:00 AM Time the rain gauge was emptied.

☒ Yes ☐ No Report was taken at registered location?

0.67 Multi Day Precipitation (in inches)

0.00 Total Depth of Snow on Ground (in inches)

0.00 Core Precipitation (in inches)

Notes

Was away for six days, looks like we had some rain!

[Submit Data](#) [Reset](#)

Section Three

Frequently asked
questions



Do I have to be home everyday
to participate in CoCoRaHS?



Answer: *No. Report when you are able. If you are gone, you may leave your gauge outside and report a multi-day total when you return*

What if I don't have a good place to put my gauge?



Answer: *Few people have ideal locations. do your best. Send site photos if possible to help interpret the results.*

What if it hails when I'm not home ?



Answer: *We still would like your hail pad. Report as much info as you can find out from friends and neighbors.*

Do I report morning dew that has collected in my rain gauge?



Answer: *No. Dew is not precipitation, but you may note the dew in the comments*

How long is my commitment to CoCoRaHS ?



Answer: *Ideally, at least one season, but the longer you contribute, the more valuable the data become.*

I have an automated weather station with a rain gauge. Can I use that instead of the CoCoRaHS gauge ?



Answer: *In order to accurately compare CoCoRaHS reports, all observers must use the 4-inch CoCoRaHS gauge. Automated rain gauges tend to underestimate a heavy rainfall and do not accurately measure water content of snow. You are welcome to place the automated gauge beside the 4-inch gauge to compare measurements, but report what falls in the 4-inch gauge.*

You are now Ready to measure precipitation
for the CoCoRaHS Network



Thanks for being one of our volunteer observers!



Just 5 minutes a day!

It's easy and fun!

We're Cuckoo For CoCoRaHS!

www.cocorahs.org

