Because every drop counts!
What Is CoCoRaHS??

“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 “just precipitation” right in their own backyards.
We just measure 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
...and report their daily observations on our interactive Website: www.cocorahs.org
Our aim is to provide the highest quality data for natural resource, education and research applications.
WHY CoCoRaHS?

5 Important Reasons
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
Who uses CoCoRaHS Data?

- 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
- Ranchers and Farmers
- Outdoor & Recreation

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

The National Oceanic and Atmospheric Administration

Colorado State University

USDA

US Bureau of Reclamation

National Weather Service Local Offices

Individual Contributors

As well as many others
In this section we will:

a) **Explain what we will need from you** before you become an observer

b) **Explain what you will need** before you can participate
a) What **we will need from you** before you can participate as an observer:
A completed application form (on-line or paper)

Your location, so we can produce accurate maps. Just having your address may not be good enough. We have to pinpoint it just as close as we can.

Your willingness to receive CoCoRaHS emails (spam blocking off)

- info@cocorahs.org
- cocorahsqc@msn.com
- nolan@atmos.colostate.edu

Your commitment to collect accurate scientific data
b) What **you will need** before you can participate as an observer
A sincere desire to help study and learn about storms.

Station Number: CO-LR-368
Station Name: FCL 3.4 SW
#4
A CoCoRaHS “4-inch” rain gauge installed in a good location

#5
A login ID and password to enter data
#6

Internet or telephone capabilities

The ability to gather accurate data and transmit it in a timely fashion
In this section we will:

a) Show how/where to place your gauge

b) Explain how to measure rainfall
a) Placement of your rain gauge

Location! Location! Location!
PlACES **not** to place your gauge

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

**NO!**

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)
- Steep slopes (a bit exaggerated)
- Animals (dogs, birds, etc)
And finally avoid anything that would artificially increase or decrease your gauge catch.

Such as a solid fence.

This can cause updrafting during strong winds, which may reduce your gauge catch.
Ideal placement of your rain gauge

Yes!

Yes!

Yes!
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

This is to improve gauge catch by reducing wind speed

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

This is to improve gauge catch by reducing the impact of nearby obstacles
LEVEL and BEVEL

Make sure your gauge is level

Bevel the top of the post to reduce rain splashing into the gauge.
b) Measuring Rainfall
When should we read our gauges?

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 rain gauge

Reading the rain gauge is easy but accuracy & consistency are important.

Here are the most common situations you may encounter when reading your gauge.
Your most common observation

... will be zero, (0.00), nada, nothing, zilch!

It is important to know that it did NOT rain. Please report zeros!
Trace “T”

When only a drop or two wet the Gauge, record a “T” for Trace
Between “T” and “one tenth” of an inch

That’s 0.04 or four hundredths
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**. This meniscus 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 making your daily rain measurements.
A nice soaking rain

This is “one half” inch.
It’s NOT 5.0, nor 0.05, but 0.50
(kind of like 50 cents out of a dollar)
A good rain

The inner tube holds 1.00 inch
DECIMALS

Getting the decimal point correct is **ESSENTIAL**

0.40"

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

When more than an inch of rain falls, the water will overflow into the outer cylinder. The whole gauge has a capacity to hold 11 inches.
To measure greater than one inch . . .

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

2) Now pour the remaining water into the funnel & measure using the inner tube.
Continue until all of the water has been measured. Make sure you keep track of your amounts along the way.

Then add up all of your measurements:
1.00 inch + 0.97 inches + 0.88 inches + 0.92 inches = 3.77 inches

Total = 3.77”
SECTION THREE:

Reporting Observations

In this section we will:

a) Introduce you to the Web-site

b) Show you how to record your observations
Our Web site is informative and easy to use. Here’s how to begin →
Login to CoCoRaHS

First, Click to Login
Recording your Daily Precipitation

After you login, the screen will automatically take you to the Daily Precip. Report
Here you will enter the total precipitation measured in your gauge.
Recording Comments

Feel free to enter comments about the day’s weather under “Notes”
Submit your Report

Click “Submit” and your data is recorded on our site
To See Your Report on the Map

Go to your state page and then click on your county
The amount of precipitation you entered shows up at **your** location on the map.
Your state’s Page

Each CoCoRaHS State has it’s own page
Other Reports

- Hail Report
- Intense Precipitation Report
- Monthly Zeros
- Multi-Day Precipitation Report
- Daily Precipitation Report
Click here to access the Intense Precipitation Report
Monthly Zeros

You can go back in and enter days of zero precipitation on one “simple to use” page.
Multi-Day Precipitation

You can even enter information after you’ve been away for several days.

“I was away for a week and read the accumulation in my gauge when I returned.”
Daily Precipitation Reports

View Data: List Daily Precipitation Reports

Search Daily Precipitation Reports
Station Fields: □ Station Number □ Station Name
Location: Colorado ▼ ALL COUNTIES ▼
Date Range:
Start Date: **6/12/2006** ▼ End Date: **6/12/2006** ▼
Precip Value: ▼ All Precip Values ▼ Operator ▼
Search

Showing 1 - 50 of 498 Records.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Station Number</th>
<th>Station Name</th>
<th>Total Precip In</th>
<th>New Snow In</th>
<th>Total Snow In</th>
<th>State</th>
<th>County</th>
<th>View</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/12/2006</td>
<td>7:04 AM</td>
<td>CO-WE-265</td>
<td>Keenesburg</td>
<td>1.33</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Weld</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:00 AM</td>
<td>CO-EP-12</td>
<td>Colorado</td>
<td>1.20</td>
<td>0.0</td>
<td>0.0</td>
<td>CO</td>
<td>El Paso</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:00 AM</td>
<td>CO-LA-44</td>
<td>Englewood</td>
<td>1.20</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Las Animas</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:00 AM</td>
<td>CO-EL-9</td>
<td>Kiowa</td>
<td>1.13</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Elbert</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:00 AM</td>
<td>CO-PH-27</td>
<td>Holyoke</td>
<td>1.06</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Phillips</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:00 AM</td>
<td>CO-WA-54</td>
<td>Lindon</td>
<td>0.92</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:00 AM</td>
<td>CO-PH-14</td>
<td>Holyoke</td>
<td>0.85</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Phillips</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:15 AM</td>
<td>CO-WA-19</td>
<td>Otis</td>
<td>0.85</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>6:15 AM</td>
<td>CO-EL-2</td>
<td>Agate</td>
<td>0.82</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Elbert</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:00 AM</td>
<td>CO-WA-55</td>
<td>Woodrow</td>
<td>0.75</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Washington</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>8:00 AM</td>
<td>CO-LN-38</td>
<td>Limon</td>
<td>0.75</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Lincoln</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>6:35 AM</td>
<td>CO-PH-33</td>
<td>Holyoke</td>
<td>0.73</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Phillips</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:00 AM</td>
<td>CO-EP-17</td>
<td>Monument</td>
<td>0.68</td>
<td>0.0</td>
<td>0.0</td>
<td>CO</td>
<td>El Paso</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>8:00 AM</td>
<td>CO-WE-275</td>
<td>Hudson</td>
<td>0.68</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Weld</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:00 AM</td>
<td>CO-LN-37</td>
<td>Limon</td>
<td>0.66</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Lincoln</td>
<td></td>
</tr>
<tr>
<td>6/12/2006</td>
<td>7:00 AM</td>
<td>CO-PH-19</td>
<td>Holyoke</td>
<td>0.64</td>
<td>0.0</td>
<td>NA</td>
<td>CO</td>
<td>Phillips</td>
<td></td>
</tr>
</tbody>
</table>
In this section we will try to answer common questions asked by observers.
**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 results.
What if it hails when I’m not at 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.
Thanks for joining us today!

You can find out more about the CoCoRaHS Network by visiting our web site or speaking with your local coordinator:

www.cocorahs.org