



# CoCoRaHS

## “CITIZEN SCIENCE IN YOUR OWN BACK YARD”



*Ciencia ciudadana en  
Su propio patio trasero*





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



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



*CoCoRaHS es una red nacional promovida por el pueblo, sin fines de lucro, basado en la comunidad, que incluye muchas personas estudiando la precipitación*

*...compuesta de voluntarios de diferentes orígenes y de todas las edades*

**CoCoRaHS**

Snow Net

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



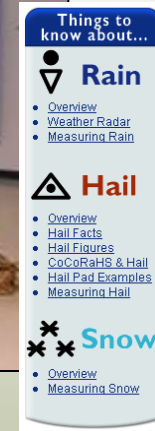
*...que toman medidas diarias de  
la “precipitación” en sus propios patios traseros.*

CoCoRaHS

Snow Net

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

*Una vez entrenados, los voluntarios colectan datos de medida utilizando herramientas de bajo costo.*



Training is important to assure accurate, high quality data

*La formación es importante para asegurar datos precisos y de alta calidad*





4-inch diameter  
high capacity rain gauges

*Pluviómetro de 4-pulgadas  
de diámetro  
de alta capacidad.*



Aluminum foil-wrapped  
Styrofoam hail pads

*Almohada de espuma de  
poliestireno forrada en  
papel de aluminio*

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

*y reportan sus observaciones diarias en nuestro sitio interactivo en la Web: **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** ?

**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."

Has your community been **IMPACTED BY DROUGHT?**  
 Tell us by submitting a "CoCoRaHS Drought Impact Report"

**Daily Precipitation (inches x.xx) USA 5/14/2010**

**Resources**

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

**Resources**

- FAQ / Help
- Education
- Training Slide-Shows
- Drought Impacts

**Volunteer Coordinators**

- Hail Pad
- Distribution/Drop-off
- Help Needed
- Printable Forms

**The Catch**

- Message of the Day
- Data Analysis

**DONATE**  
 CLICK HERE TO GIVE TO COCORAHHS

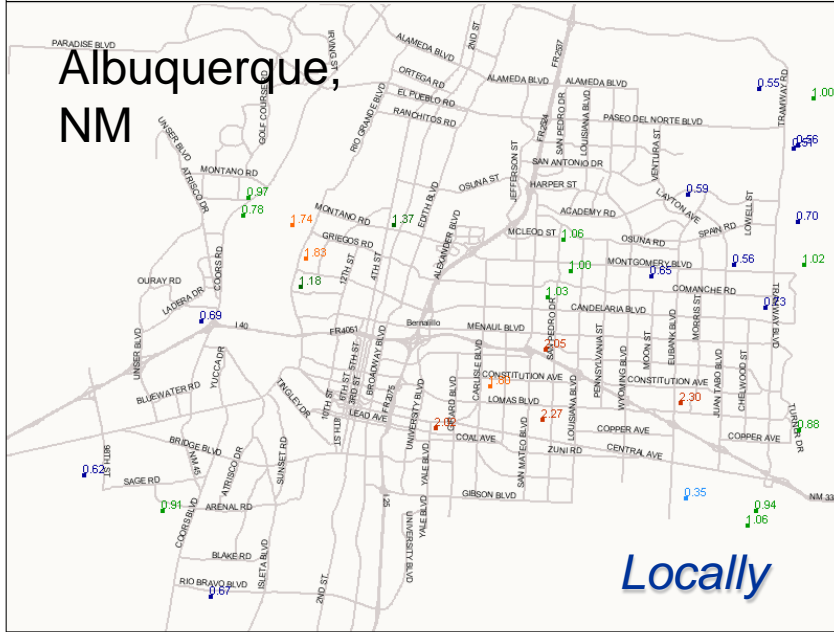
**TRAINING SLIDE-SHOWS**

Things to know about...



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

Albuquerque, New Mexico 8/1/2006

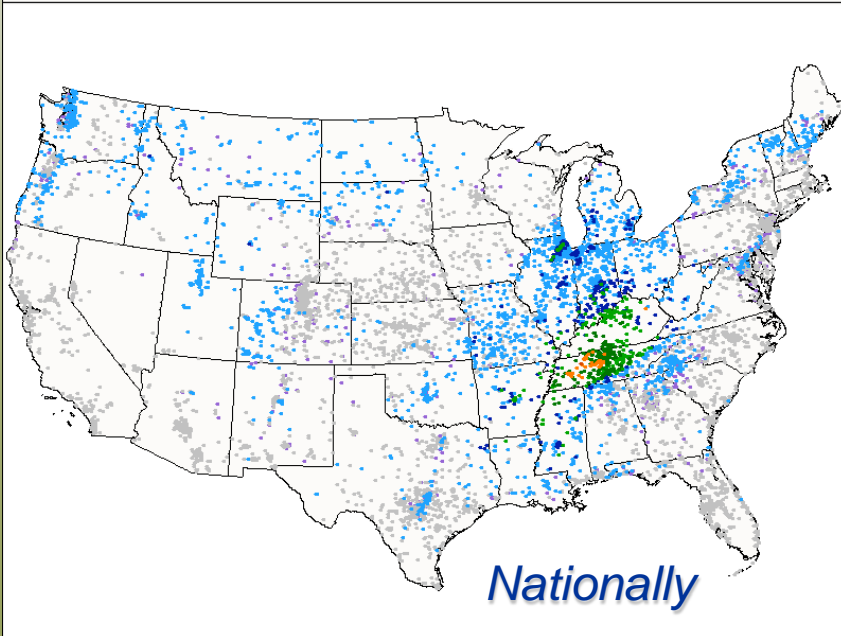


*Volunteer's observations are immediately available in map and table form for the public to view.*

*Las observaciones de los voluntario están disponibles de inmediato en el mapa y en forma de tabla para que el público las vea.*

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

USA 5/2/2010



Date	Time	Station Number	Station Name	Total Precip _Ins	New Snow _in	Total Snow _In	State	County	View
1/19/2009	7:00 AM	RI-PR-10	Woonsocket 0.3 W	1.00	11.5	NA	RI	Providence	
1/19/2009	7:00 AM	RI-PR-7	Cranston 1.9 E	0.84	7.0	9.5	RI	Providence	
1/19/2009	8:00 AM	RI-PR-13	Pawtucket 1.4 NE	0.83	8.7	13.0	RI	Providence	
1/19/2009	7:00 AM	RI-PR-11	Providence 3.0 ENE	0.82	9.0	12.0	RI	Providence	
1/19/2009	8:00 AM	RI-WS-8	Saunderstown 2.2 NW	0.73	6.0	NA	RI	Washington	
1/19/2009	8:30 AM	RI-KN-2	East Greenwich 2.3 ESE	0.67	5.5	9.5	RI	Kent	
1/19/2009	7:00 AM	RI-NW-3	Jamestown 2.6 NNW	0.62	5.4	11.0	RI	Newport	
1/19/2009	7:00 AM	RI-WS-7	North Kingstown 3 N	0.59	5.0	9.0	RI	Washington	
1/19/2009	8:30 AM	RI-KN-1	Coventry Center	0.54	8.6	10.0	RI	Kent	
1/19/2009	7:00 AM	RI-WS-6	Narragansett Pier 0.5 N	0.49	4.2	7.5	RI	Washington	
1/19/2009	8:00 AM	RI-WS-9	Charlestown 3.9 NNW	0.46	6.2	9.0	RI	Washington	
1/19/2009	9:00 AM	RI-WS-1	Hope Valley 3.7 S	0.34	3.9	NA	RI	Washington	
1/19/2009	9:30 AM	RI-WS-5	Kingston 0.5 NW	0.31	3.4	8.0	RI	Washington	
1/19/2009	11:59 PM	RI-PR-14	Woonsocket 1.3 ESE	0.13	2.0	12.0	RI	Providence	
1/19/2009	7:00 AM	RI-NW-4	Middletown 1.1 SW	NA	3.0	7.0	RI	Newport	

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



## STORM TOLL

Deaths - 5 confirmed  
Injuries - 40  
Missing - 16  
Rescued - 160

Damages - Tens of millions of dollars at Colorado State University, \$1.5 million to \$2 million to city roads and bridges; \$1 million to city parks and trails; no estimate for private property.

Source: Emergency Officials  
All information as of 1 a.m. today

## Wednesday



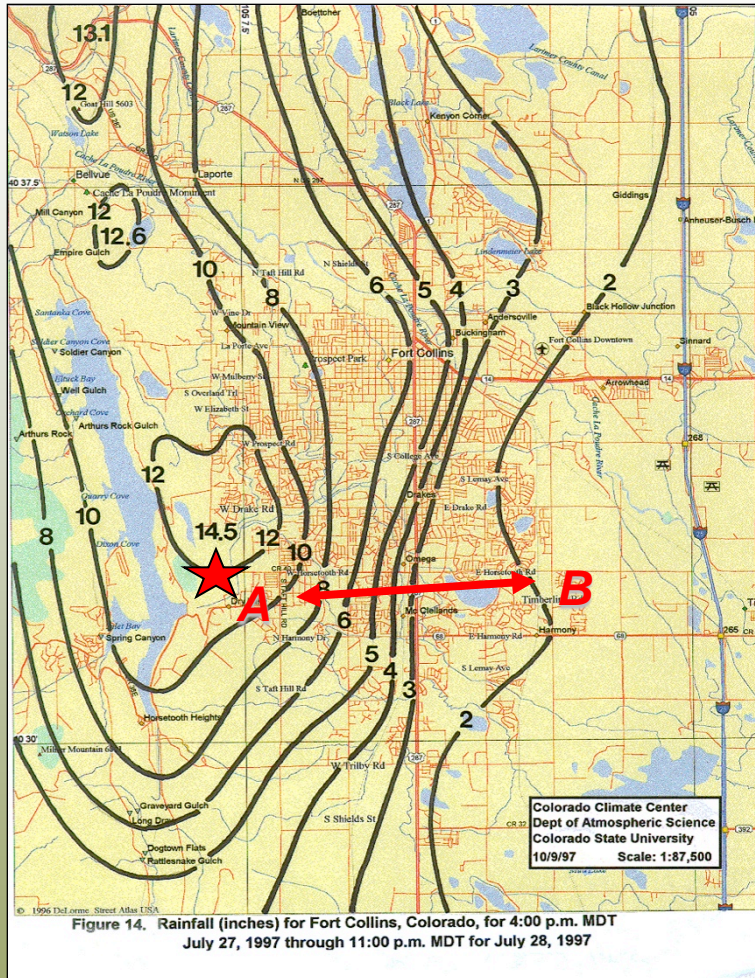
## July 30th 1997



*CoCoRaHS nació en respuesta a las inundaciones de 1997 en Fort Collins, Colorado*



# The flood pointed out:



1. The extreme local variations in rainfall.
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

*La inundación indicó:*

*1. Las variaciones extremas de las lluvias locales.*

*2. La importancia del papel que individuos pueden desempeñar en la medida, la cartografía y la presentación de informes sobre la precipitación.*

*Distancia entre A y B = 5 millas*

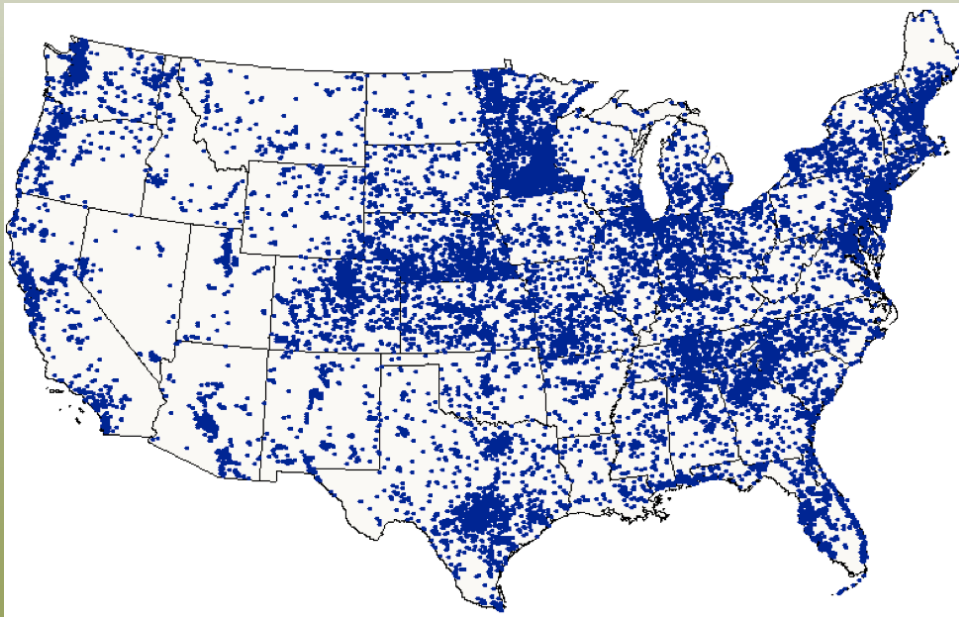
*A = 14.5 in*

*B = 2.0 in*



## *What began as a community project*

*Lo que comenzó como un proyecto comunitario*



*Has turned into an important nationwide precipitation database*

*Se ha convertido en una base de datos de las precipitaciones importante en todo el país*



# CoCoRAHS DATA IS USED BY MANY

*Los datos de CoCoRaHS son ocupados por muchos*

- National Weather Service
  - Other Meteorologists
  - Hydrologists
  - Emergency Managers
  - City Utilities
    - Water supply
    - Water conservation
    - Storm water
  - Insurance adjusters
- *Servicio Nacional de la Meteorología*
  - *Otros meteorólogos*
  - *Los hidrólogos*
  - *Administradores de emergencias*
  - *Servicios de la Ciudad*
    - *Ministro del agua*
    - *Ministro de conservación del agua*
    - *Ministro de aguas pluviales*
  - *Los ajustadores de seguros*

# CoCoRAHS DATA IS USED BY MANY

*Los datos de CoCoRaHS son ocupados por muchos*

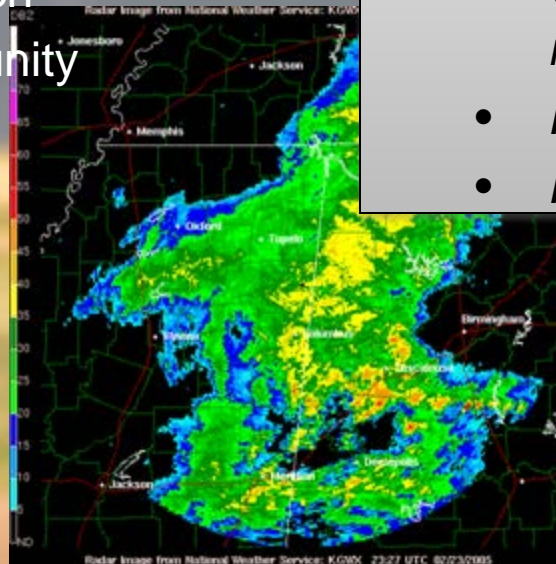
- USDA—Crop production
- Engineers
- Scientists studying storms
- Mosquito control
- Farm Service Agency
- Ranchers and Farmers
- Outdoor & Recreation

- *USDA- Los ingenieros en la producción de cultivos*
- *Los científicos que estudian las tormentas*
- *El control de mosquitos*
- *Agencia de Servicios Agrícolas*
- *Ganaderos y Agricultores de*
- *Recreación y Actividades al aire libre*

# CoCoRAHS DATA IS USED BY MANY

*Los datos de CoCoRaHS son ocupados por muchos*

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



- *Maestros y Estudiantes*
  - *Herramienta de educación*
  - *Ciencias de la Tierra*
  - *Tomar medidas*
  - *El análisis de los datos*
  - *Organización de los resultados*
  - *Para investigaciones*
  - *Para ayudar a la comunidad*



# Placement of your gauge

Location is the key to good data

But, please remember the  
bottom line...

Do Your Best 😊

## ***Colocación de su medidor***

*La ubicación es la clave para buenos  
datos*

*Pero, por favor, recuerde que al fin...*

*Haga lo mejor que pueda 😊*



# Places not to place your gauge

***Lugares donde no poner su medidor***

*El #1, el peor lugar donde poner su medidor  
es en la caja!*



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

Some things can't be avoided

*Algunas cosas no se pueden prevenir*



*Ideal placement  
for your gauge*



***Lugar ideal para su medidor***



# Measuring Rainfall with your Gauge

Accuracy and consistency  
are very important

***Medida de las precipitaciones  
con su pluviómetro***

***La precisión y la consistencia son  
muy importantes!***



# Reading your Gauge

Here are the most common situations you will encounter

## ***Leyendo su medidor***

*Estas son las situaciones más comunes que se encontrará*



# YOUR MOST COMMON OBSERVATION WILL BE . . .

*Su observación más común será...*

## ZERO “0.00”

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

***Please report zeros!***

*Es importante saber cuando NO  
llovió.*

***¡Favor de reportar los ceros!***



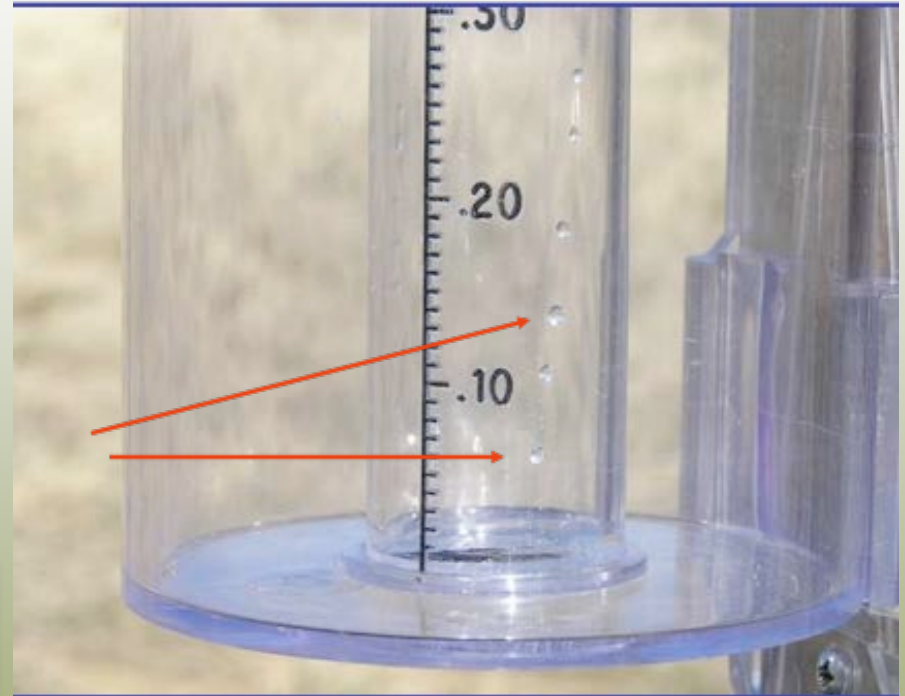


# Trace “T”

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

## **Rastro “T”**

*Cuando sólo una o dos gotas mojan el pluviómetro indíquelo con "T" para rastro*



# The Meniscus

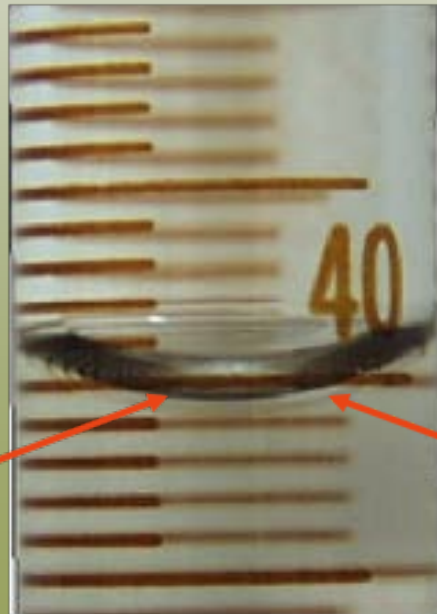
## *El menisco*

*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.



*La superficie del agua en el medidor se ve curvada. ¿Cómo puedo saber dónde leer?*

*Como el agua llena el tubo de medición, una superficie curvada se forma llamada **el menisco**. Está formado por la tensión superficial de un líquido en contacto con los lados del tubo.*

*Siempre lea la parte baja del menisco cuando tome su medida diaria de la lluvia*

# 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!

***Favor de no redondear***

*Es muy importante que se registre la mayor precisión a la centésima de pulgada.*

*Por favor, ¡no redondeé a la décima más cercana!*



# ***When should we take our observations?***

*¿Cuándo debemos hacer nuestras observaciones?*

7:00AM is preferred

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

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

*7:00 AM es preferido  
Entre las 5:00 y las 9:00 am  
esta bien  
Otras horas serán  
aceptadas, pero no se  
documentarán en los mapas  
de CoCoRaHS*



# To measure greater than one inch . .

*Para medir más de una pulgada...*

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



*Vierta la primera pulgada de la tubo interior y anótelo.*

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



*Vierta el resto del agua en el embudo y mida el tubo interior.*

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



*Continúe hasta que mida toda el agua. Asegúrese de mantener un registro de sus medidas a lo largo del camino.*



# Observing Hail

*Observando el*

*granizo*



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

*CoCoRaHS se ha convertido en uno de los repositorios mayores de datos de granizo en los Estados Unidos*



# As hail is falling

*Fill out your  
"CoCoRaHS Hail Report  
Card"*

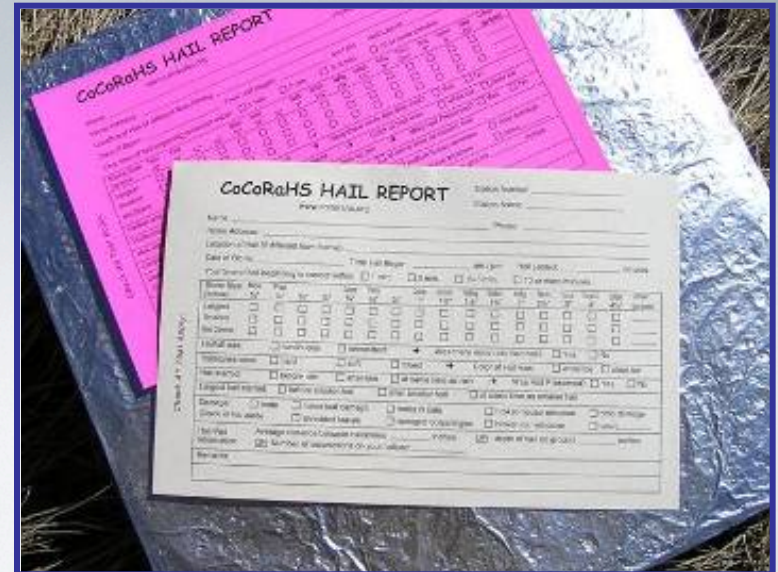
*After the storm is over attach  
it onto the back of the pad*



## **Cuando el granizo este cayendo**

*Llene su  
"CoCoRaHS Hail Report Card"*

*Después de la tormenta colóquela en  
la parte posterior de la almohadilla*



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.*



Photo by Carl Whitehurst

***Si es posible entregue  
un***

***“Online Hail Report”  
lo más pronto posible.***

***(no necesita una almohadilla de granizo  
para presentar un informe)***

***Su reporte va directo al Servicio  
Nacional del Tiempo.***

The screenshot shows the National Weather Service website interface. At the top, there is a blue header with the NOAA logo on the left, the text "National Weather Service" in the center, and the "weather.gov" logo on the right. Below the header, the main title "Watches, Warnings & Advisories" is displayed in large white text. Underneath, there is a search bar with the text "Local weather forecast by 'City, St' or zip code" and a "Go" button. The main content area is titled "Special Weather Statement" and contains the following text:

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.



# Measuring Snow

*“Snow is good”*  
- Nolan Doesken

## ***Midiendo la nieve***

*“La nieve es buena”*  
– 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



## ***Dos formas que se mide la nieve***

*Nuestro observadores miden:*

1. *Contenido de agua líquida de la nieve*
  - *Del medidor*
  - *A partir de una muestra de la base*
2. *Altura de la nieve*
  - *La acumulación de nieve 24 horas*
  - *Profundidad de nieve existentes*

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



*USTED PUEDE APRENDER MAS SOBRE LA MEDICIÓN DE NIEVE AL  
VER NUESTRA PRESENTACIÓN “IN DEPTH SNOW MEASURING” EN  
LA WEB*

# What else???

## Besides contributing to science...

- Opportunities to meet and ask questions to scientists
- Meet new friends through CoCoRaHS social networking and events

It's FUN!!! 😊

## *¿Qué más?*

*Aparte de contribuir a la ciencia...*

- *Oportunidades para conocer y hacer preguntas a los científicos*
- *Conocer nuevos amigos por medio de la red social de CoCoRaHS*
- *¡¡Es DIVERTIDO!!*

CoCoRaHS



# CoCoRaHS events: The 'Make it Rain Game'



*Eventos de CoCoRaHS: El juego "haz que llueva"*

# HOW CAN YOU GET INVOLVED?



[www.cocorahs.org](http://www.cocorahs.org)  
[noah@cocorahs.org](mailto:noah@cocorahs.org)

## *Five Easy Steps*

Sign-up on the  
CoCoRaHS web page  
[www.cocorahs.org](http://www.cocorahs.org)

Obtain a 4" plastic rain gauge

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.

# **¿CÓMO SE PUEDE INVOLUCRAR?**



[www.cocorahs.org](http://www.cocorahs.org)  
[noah@cocorahs.org](mailto:noah@cocorahs.org)

## **Cinco pasos fáciles**

***Regístrese en la página web de  
CoCoRaHS***

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

***Obtenga un pluviómetro plástico de 4”***

***Ve la presentación de diapositivas  
“training slide show” o  
asista una sesión de  
entrenamiento***

***Ponga el medidor en un "buen"  
lugar en su patio trasero***

***Comience a observar la  
precipitación  
y ponga sus informes en el  
sitio Web.***





Just 2 minutes a day!  
 Sólo 2 minutos al día

It's easy and fun!  
 Es fácil y divertido

# We're Cuckoo For CoCoRaHS!

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

