



# **Celebrating Water this Earth Day**

February 16, 2023

The webinar will begin at 1:00 pm  
Mountain Time and will be recorded

# Facilitators

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Community Collaborative Rain, Hail and Snow Network (CoCoRaHS)

# Today's Agenda

- Welcome/Icebreaker
- We are Water Overview
- Earth Day 2023
- Citizen Science Overview
  - EarthEcho Water Challenge
  - CoCoRaHS Citizen Science
- Social Media Photo Challenge Ideas
- Community Partnerships
- Q&A

# Icebreaker: What Water Quality Indicator Are You Today?



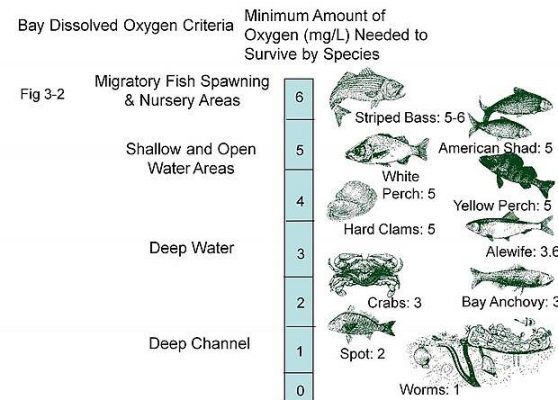
Turbidity  
 (The relative clarity of water)  
 Unclear, scattered  
 Clear and light



Temperature  
 Hot, cold, maybe just chillin'



pH  
 (The acidity of water)  
 Sharp, caustic, abrasive  
 Relatively neutral



Dissolved oxygen  
 Ready to support others  
 Dank cold and inhospitable



Traveling Exhibition in the Four Corners Region of the Southwestern U.S.

Sharing stories and inspiring conversations about what water means to communities

This material is based upon work supported by the National Science Foundation under Grant Number DRL-1097024 and 1906951.

# Earth Day 2023

- 53rd (!) annual Earth Day
- 1 billion people participate in Earth Day actions annually in over 190 countries
- 2023 Theme: Invest in Our Planet
- Earth Day Action Toolkit
- Register your Earth Day event on the [earthday.org](https://earthday.org) calendar



# What is citizen science?

A global movement that enables people from all walks of life (anytime, anywhere) to participate in **real scientific research** by making and sharing observations with scientists.

It's how people can make an impact on issues  
they care about!

# Is “Citizen Science” the best term for your community?

Consider alternative terms when promoting your programs:

- Community Science
- Neighborhood Data Collection
- Crowd Source Science





**GLOBE Observer**

Choose your protocol:

-  GLOBE clouds
-  GLOBE mosquito habitat mapper
-  GLOBE Land Cover  
Adopt a Pixel
-  GLOBE Trees



THE **GLOBE PROGRAM** 

<https://observer.globe.gov/about/get-the-app>



# Learn more about GLOBE Observer

Eclipse Citizen Science with GLOBE Webinar

May 4th from 11 am - 12 pm Mountain Time

<https://www.starnetlibraries.org/event/seal-virtual-training-citizen-science-and-eclipse-programming-3/>



## **Bilingual GLOBE Observer Card**

*use center hole as a pinhole camera*

*100 per library*



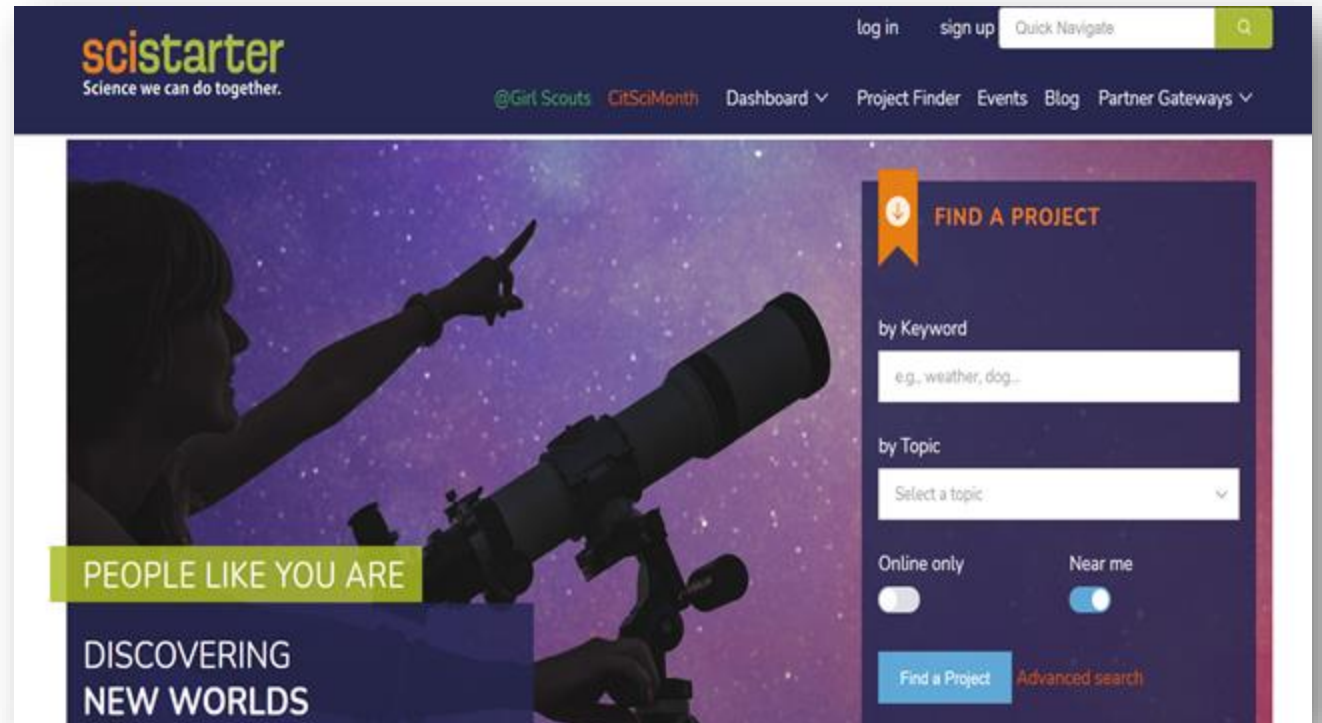
## **Digital talking air temperature thermometer**

*One per library*

*(limited supply of Spanish)*

# What is SciStarter.org?

A globally acclaimed web and mobile site that connects millions of people to thousands of projects, events, and tools.



Find replicable resources designed for libraries at:  
[SciStarter.org/Library](https://SciStarter.org/Library)

# EarthEcho Water Challenge



- Formerly World Water Monitoring Challenge
- Runs March 22 2023 (UN World Water Day) through December
- Three steps:
  - **TEST** the water quality in your local area
  - **SHARE** your data online to an international database
  - **PROTECT** your local watershed by taking action
- Test turbidity, temperature, dissolved oxygen, and pH

# EarthEcho Water Challenge



- Classroom testing kits available for \$65.50 USD
- Application opening soon for donated/sponsored kits
- EarthEcho website includes
  - Action Guides
  - Lesson Plans
  - Training Videos for testing equipment
  - Extension Resources

# EarthEcho Water Challenge Classroom Kits



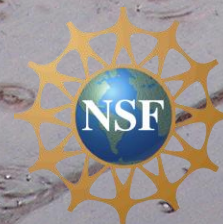
- The Classroom Kit includes five sets of hardware and enough reagents to conduct up to 50 rounds of testing for pH, dissolved oxygen, temperature, and turbidity. Included are:
  - 1 Instruction booklet (English/Spanish)
  - 5 Sample collection jars
  - 5 pH test tubes
  - 5 Dissolved oxygen vials
  - 5 Secchi disk decals
  - 10 Temperature strips (5 14-40°C and 5 0-12°C)
  - 50 pH reagent tablets (enough for 50 tests)
  - 100 Dissolved oxygen reagent tablets (enough for 50 tests)
  - 5 Color charts for determining DO, pH and turbidity test results
  - 5 Mini pencils



**Noah  
Newman**

# CoCoRaHS

## “Crowdsourcing Precipitation Data”





# 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



**July 30th  
1997**



# Volunteers of all ages and backgrounds



*Observers are trained and take daily measurements of precipitation in their backyards.*

*25,000 active observers in the network*

# Simple, easy-to-handle low-cost equipment





# Rainfall data

*CoCoRaHS has become the largest source of daily precipitation measurements in the United States*



# Snowfall data

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



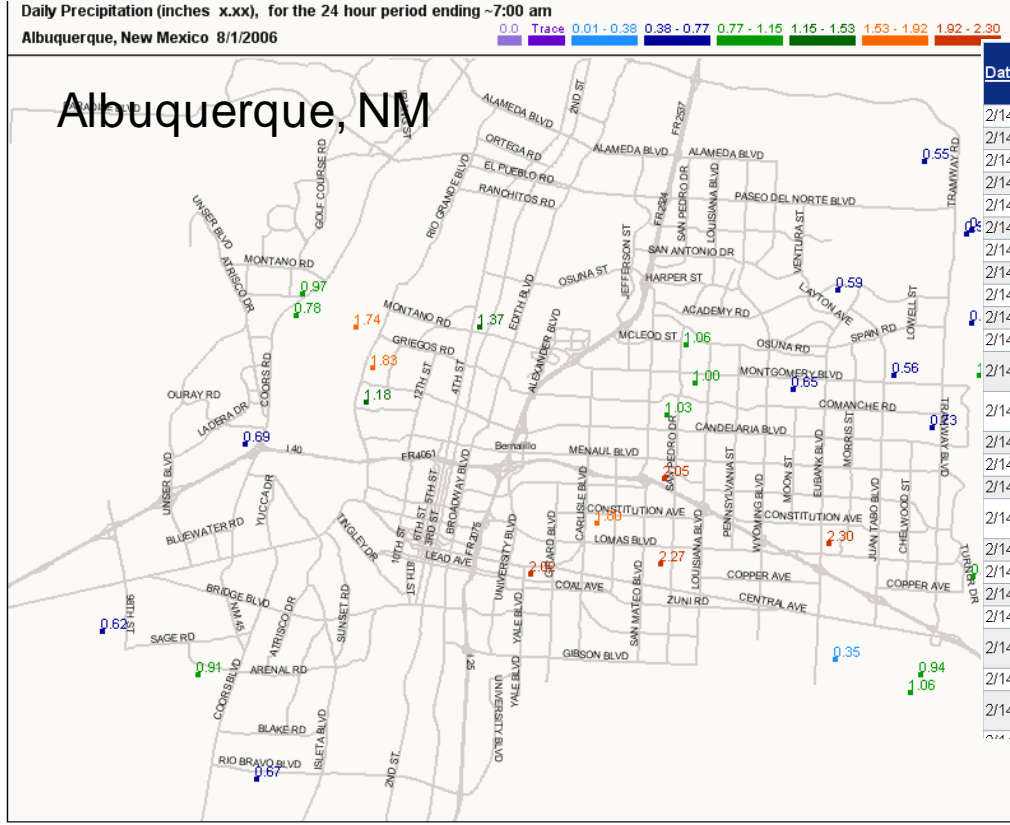
# Hail data

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



*CoCoRaHS's main focus is to provide:*

# precipitation data

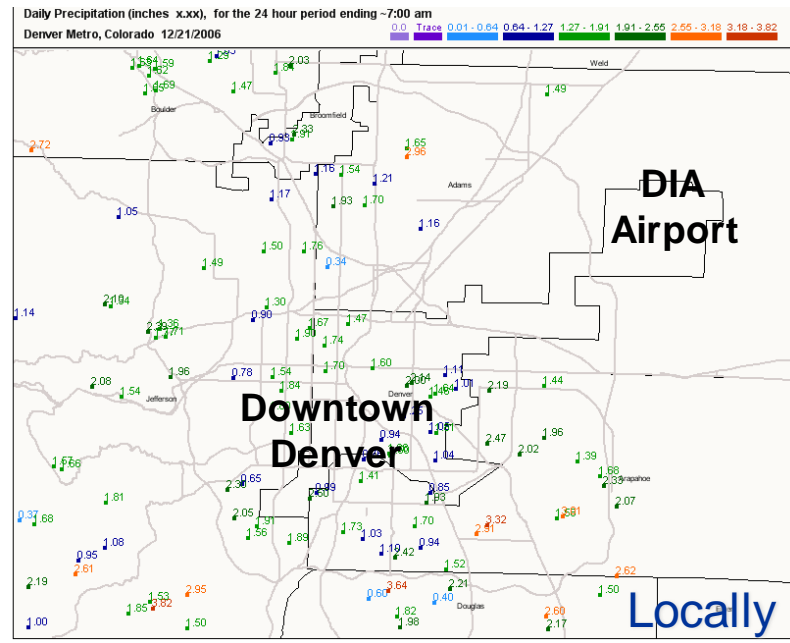


Date	Time	Station Number	Station Name	Total Precip .in	New Snow .in	Total Snow .in	State	County	View
2/14/2007	7:00 AM	MD-GR-1	Mc Henry 4.0 SSE	2.85	6.7	12.5	MD	Garrett	<a href="#">View</a>
2/14/2007	11:59 PM	MD-MG-8	Gaithersburg 2 WNW	2.80	4.2	4.0	MD	Montgomery	<a href="#">View</a>
2/14/2007	10:00 AM	MD-CR-7	Westminster 1.0 W	2.10	5.5	5.5	MD	Carroll	<a href="#">View</a>
2/14/2007	7:40 AM	MD-MG-1	Montgomery Village 1.3 SSW	2.05	4.1	3.0	MD	Montgomery	<a href="#">View</a>
2/14/2007	5:44 AM	MD-WH-1	Williamsport 2.8 ENE	1.92	2.6	5.0	MD	Washington	<a href="#">View</a>
2/14/2007	7:15 AM	MD-CR-3	Mount Airy 0.2 SE	1.90	5.1	5.0	MD	Carroll	<a href="#">View</a>
2/14/2007	7:00 AM	MD-CR-6	Taneytown 3.2 NE	1.83	5.0	NA	MD	Carroll	<a href="#">View</a>
2/14/2007	7:00 AM	MD-HW-2	Sykesville 1.7 SSE	1.78	5.0	5.0	MD	Howard	<a href="#">View</a>
2/14/2007	7:00 AM	MD-HW-12	Sykesville 2.6 SE	1.61	0.0	NA	MD	Howard	<a href="#">View</a>
2/14/2007	8:00 AM	MD-MG-3	Potomac 0.9 NNW	1.54	3.2	NA	MD	Montgomery	<a href="#">View</a>
2/14/2007	7:00 AM	MD-MG-2	Redland 0.8 NNE	1.52	4.5	4.5	MD	Montgomery	<a href="#">View</a>
2/14/2007	7:00 AM	MD-PG-37	Brandywine 6.7 ESE	1.49	T	T	MD	Prince George's	<a href="#">View</a>
2/14/2007	7:00 AM	MD-PG-1	Bowie 0.5 E	1.47	1.0	1.5	MD	Prince George's	<a href="#">View</a>
2/14/2007	7:00 AM	MD-SM-3	Leonardtown 0.6 NE	1.42	0.0	NA	MD	St. Mary's	<a href="#">View</a>
2/14/2007	7:00 AM	MD-CH-7	Waldorf 3.2 SW	1.40	0.8	0.7	MD	Charles	<a href="#">View</a>
2/14/2007	7:00 AM	MD-HW-11	Columbia 1.7 W	1.40	3.2	3.5	MD	Howard	<a href="#">View</a>
2/14/2007	7:00 AM	MD-PG-7	Camp Springs 1.6 NNW	1.38	1.8	NA	MD	Prince George's	<a href="#">View</a>
2/14/2007	4:00 PM	MD-BL-7	White Hall 3.5 NE	1.38	NA	NA	MD	Baltimore	<a href="#">View</a>
2/14/2007	7:00 AM	MD-CV-1	Marlton 6.0 E	1.37	0.3	0.0	MD	Calvert	<a href="#">View</a>
2/14/2007	7:00 AM	MD-SM-4	Charlotte Hall 3.6 ENE	1.37	0.3	T	MD	St. Mary's	<a href="#">View</a>
2/14/2007	7:00 AM	MD-MG-24	White Oak 1.2 N	1.35	2.5	2.0	MD	Montgomery	<a href="#">View</a>
2/14/2007	7:00 AM	MD-PG-35	Brandywine 2.5 NNW	1.35	1.0	1.4	MD	Prince George's	<a href="#">View</a>
2/14/2007	7:00 AM	MD-WC-1	Vienna 11.3 SSW	1.35	0.0	NA	MD	Wicomico	<a href="#">View</a>
2/14/2007	7:00 AM	MD-PG-6	Friendly 1.0 N	1.32	2.4	1.8	MD	Prince George's	<a href="#">View</a>
2/14/2007	7:00 AM	MD-MG-5	North Laurel 1.0 SE	1.31	3.4	2.5	MD	Montgomery	<a href="#">View</a>

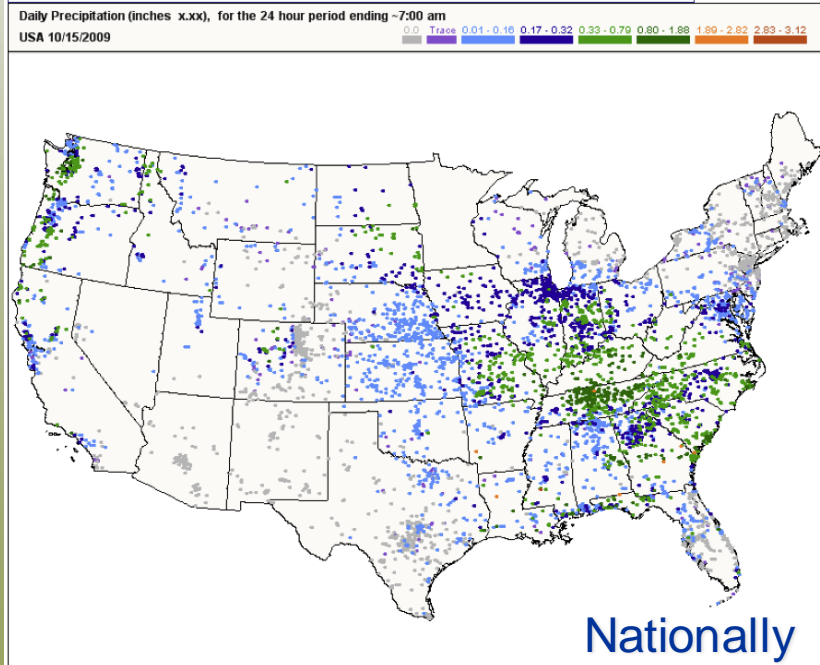
Daily data in table form

Daily precipitation maps: Rainfall, Hail and Snowfall

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.



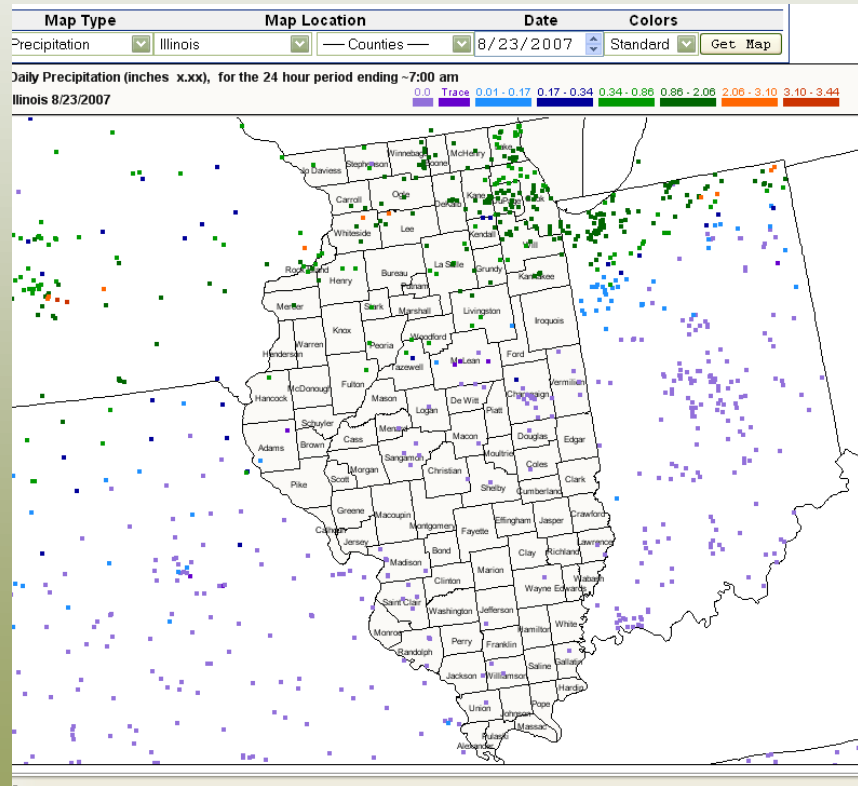
Volunteer's observations are immediately available **in map** and **table** form for the public to view.



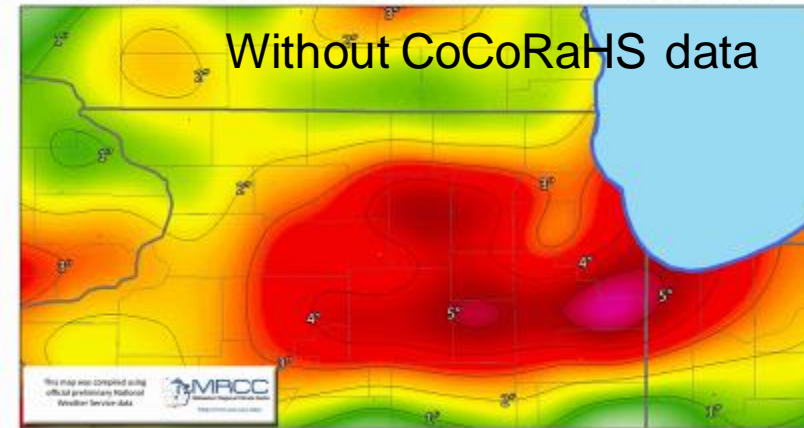
Date	Time	Station Number	Station Name	Total Precip .Ins	New Snow .in	Total Snow .in	State	County	View
4/29/2008	7:00 AM	RI-WS-3	Ashaway 0.8 ENE	2.35	0.0	NA	RI	Washington	
4/29/2008	7:00 AM	RI-PR-7	Cranston 1.9 E	2.20	0.0	NA	RI	Providence	
4/29/2008	7:47 AM	RI-KN-1	Coventry Center	2.18	0.0	NA	RI	Kent	
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	

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

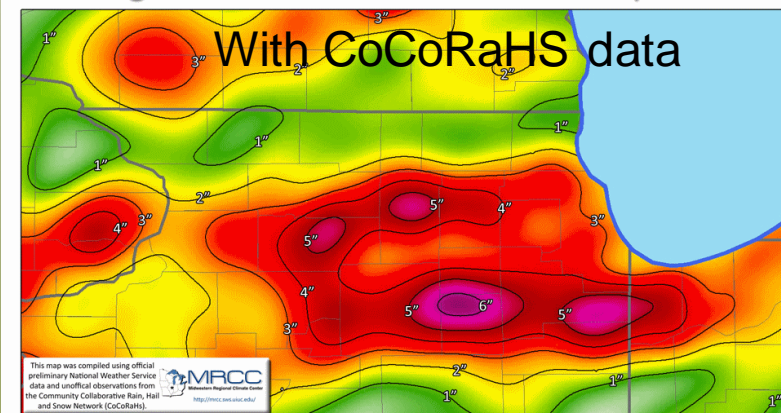
*“It’s like increasing the number of pixels on your digital camera. You get a much clearer picture!”*



(A) August 23 & 24 Accumulated Precipitation



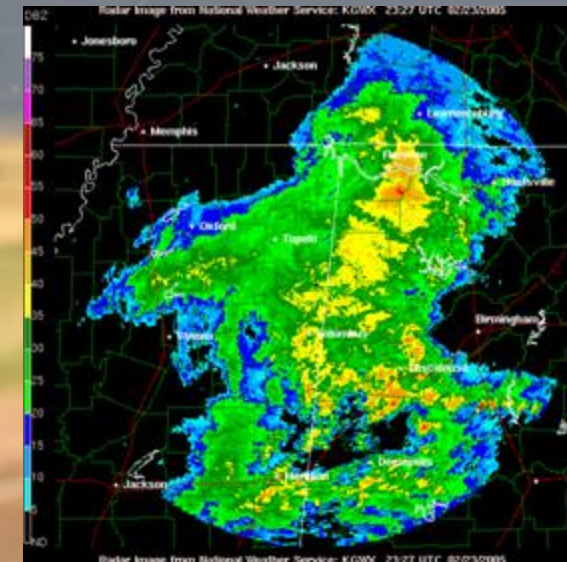
(B) August 23 & 24 Accumulated Precipitation





# 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





# Climate Literacy Resources for Library Patrons

- Lesson Plans and Activities
- Educational Animation Series
- State Climate Series
- Master Gardeners Resources
- WxTalk Webinars
- Training Videos, Slide Shows
- Ask an expert / Contact a Scientist
- Data, Data, Data!

# Water-related Earth Day resources for Libraries

## Make it Rain! (in Augmented Reality)

Step 1: Download the free App called Zappar using the QR code for Apple or Android



<https://apps.apple.com/gb/app/zappar/id429885268>



<https://play.google.com/store/apps/details?id=com.zappar.Zappar>

Step 2: Using the Zappar App, point to this lightning bolt and watch it rain through your camera!



Spotty Rain  
Campaign

*Enhancing the Capacity for Rural Libraries to Engage the Public in Drought Monitoring.*

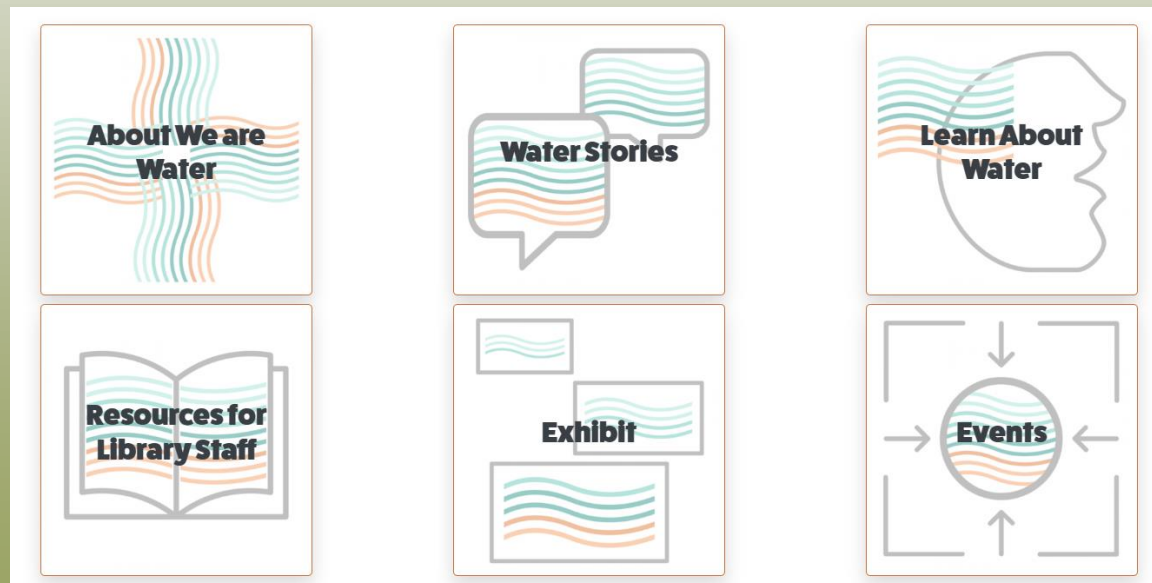



A citizen-science project to become a drought monitor!



This program is funded by the National Science Foundation under the award DRL- 1811506

# Water-related Earth Day resources for Libraries





# HOW CAN YOU BECOME PART OF THE NETWORK?

## *Five easy steps*

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



# Social Media Photo Contest



     
We are Water  
connecting communities

Photo  
Contest

Open through October 6



# Social Media Photo Contest

- Showcase water and communities in the Four Corners Region
- Five categories:
  1. Communities and Life
  2. Landscapes
  3. Wildlife
  4. Vegetation
  5. Weather



# Photo Contest Requirements

- Format: Upload highest resolution in .gif, .jpeg, .jpg, .png, .tif, or .tiff formats, must be at least 2000 pixels on its longest side and no larger than 10 MB in file size
- Caption: Include location, date, brief description
- Multiple entries: Entrants may submit multiple photos, but will need to fill out a separate Google Form for each
- Permission to use: By submitting a photograph, you agree to the use of your image in the We are Water website, social media accounts, reports, newsletters, presentations, and other products.

# Who can submit?

- If you live in, are from, or have spent time in the Four Corners Region we will accept your submission
- Current and previous residents of the Four Corners Region will be given special consideration in the judging process



# Judging

We are Water team members and partners will judge the photos and select first, second, and third place winners, as well as best water reflection and best visiting photograph.

Entrants' names will not be included in the selection process.



## Prizes Include:

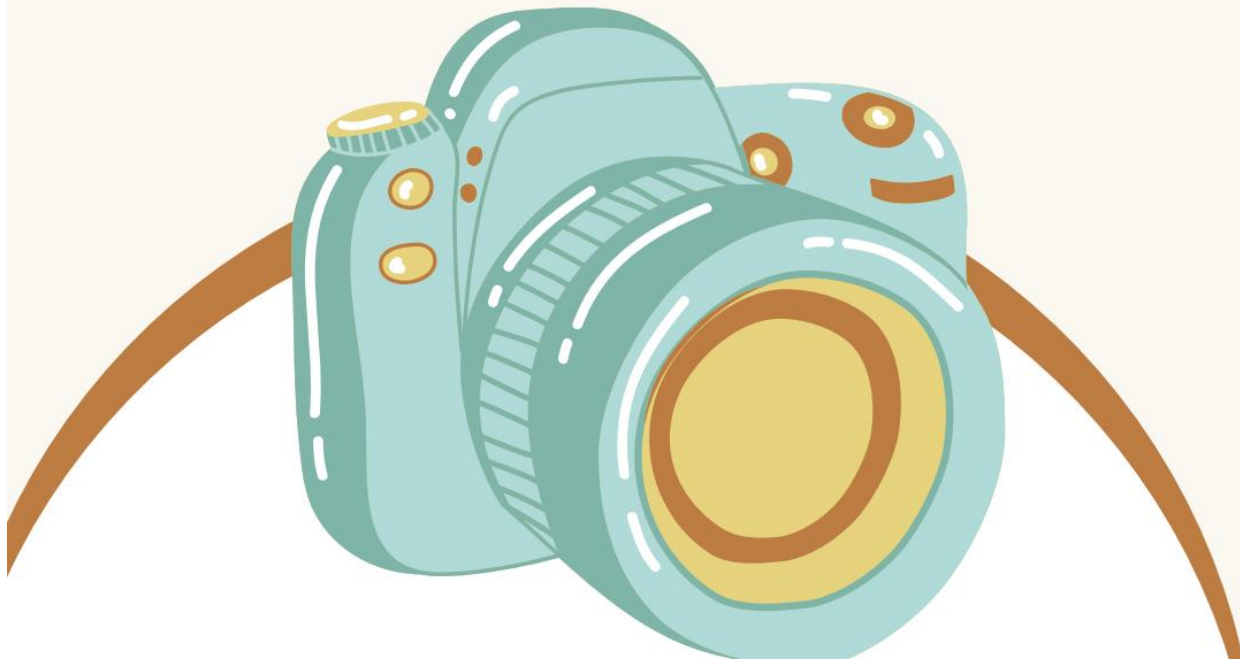
**1st Place:** \$100 gift card

**2nd Place:** \$75 gift card

**3rd Place:** \$50 gift card

**Best Water Reflection:** \$50 gift card

**Best Visitor Photograph:** \$50 gift card



**Submit  
your  
photos  
here!**

<http://bit.ly/WaWPhotoContest>

# Community Partnerships

- Co-create learning experiences
- Guest presenters/facilitators
- Translation assistance
- Promotion of programs
- Sponsors
- Enriching the experience



# Community Partnerships

## Four Corners Region

- Mountain Studies Institute: San Juan Mountains, Colorado
- Sangre de Cristo Acequia Association: San Luis, Colorado
- Water Education Colorado
- Navajo Nation Educators and Elders: Arizona
- Southern Ute Indian Tribe Cultural Preservation Department
- Laguna Pueblo community members: New Mexico
- Girl Scouts
- U.S. Forest Service
- Conservation Districts
- Authors



# Share in the chat

Finding partners is one way to take action. Who can you reach out to in your community?



# Join us for our upcoming Citizen Science Webinars!

- April 12th and 25th, May 4th and 22nd
  - <https://community.starnetlibraries.org/seal-citizen-science-registration/>
  - Recording of all 4 webinars will be released beginning of June
- *STAR Net* STEM Activity Clearinghouse Citizen Science Collection
  - <http://clearinghouse.starnetlibraries.org/134-citizen-science>



# Discussion

What else have you done in your community to advocate for clean water (or other environmental topics)?

# Thank you!



Questions?