Citizen Science: Precipitation

David Bydlowski, Susan Croskey, Kathleen Heikkinen

‘‘Super Science for Super Teachers – Continuing Changing the Equation’’ (S3T-C2tE) – Partnership between Madonna University, Lawrence Technological University and the Michigan Department of Education

Presentation Objectives

- I can investigate Citizen Science Projects.
- I can use technology to learn and collaborate on Citizen Science Projects.
- I can formulate real-world STEM connections beyond the classroom.

CoCoRaHS

Community Collaborative Rain, Hail, and Snow Network

http://cocorahs.org

The next video can be found at:
https://www.youtube.com/watch?v=YBbO4FnNizg

CoCoRaHS's main focus is to provide:

CoCoRaHS observations are used by many

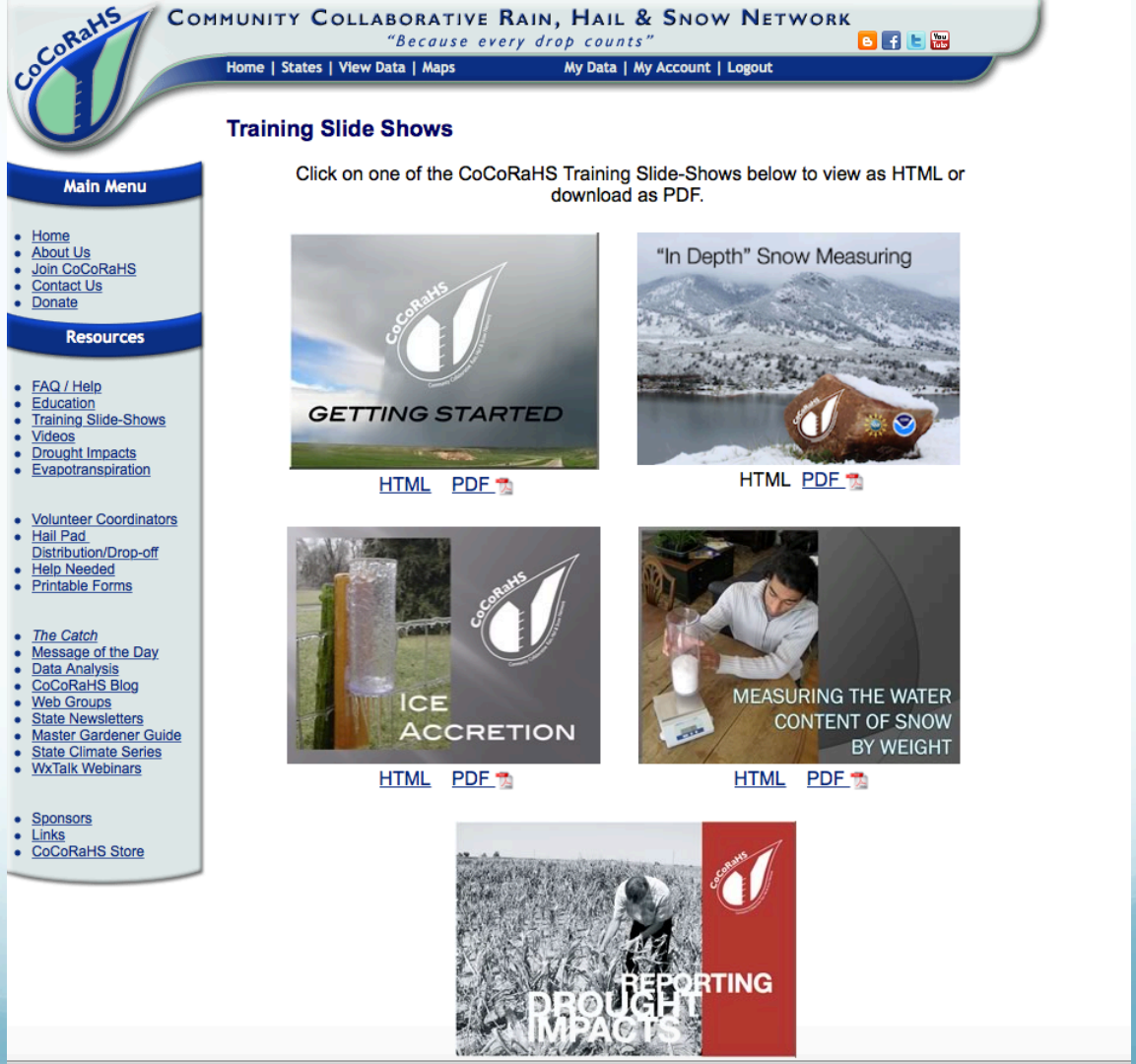
- National Weather Service
- Other Meteorologists
- Hydrologists
- Emergency Managers
- City Utilities
  - Water supply
  - Water conservation
  - Storm water
- Insurance adjusters
- USDA -- Crop production
- Engineers
- Scientists studying storms
- Mosquito Control
- Farm Service Agency
- Ranchers and Farmers
- Outdoor & Recreation

- Teachers and Students

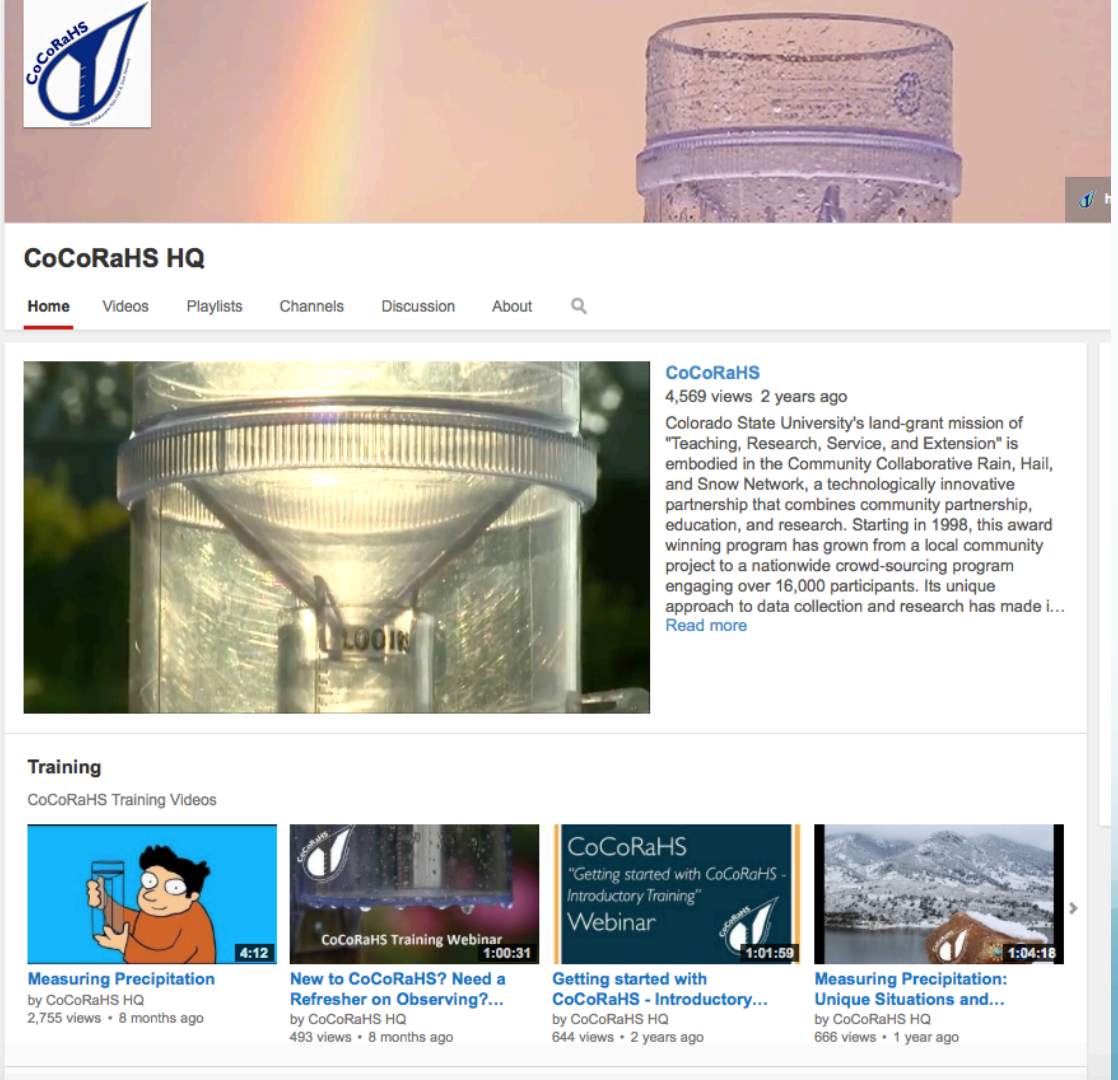
Geoscience education tool
Taking Measurements
Analyzing data
Organizing Results
Conducting Research
Helping the Community

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

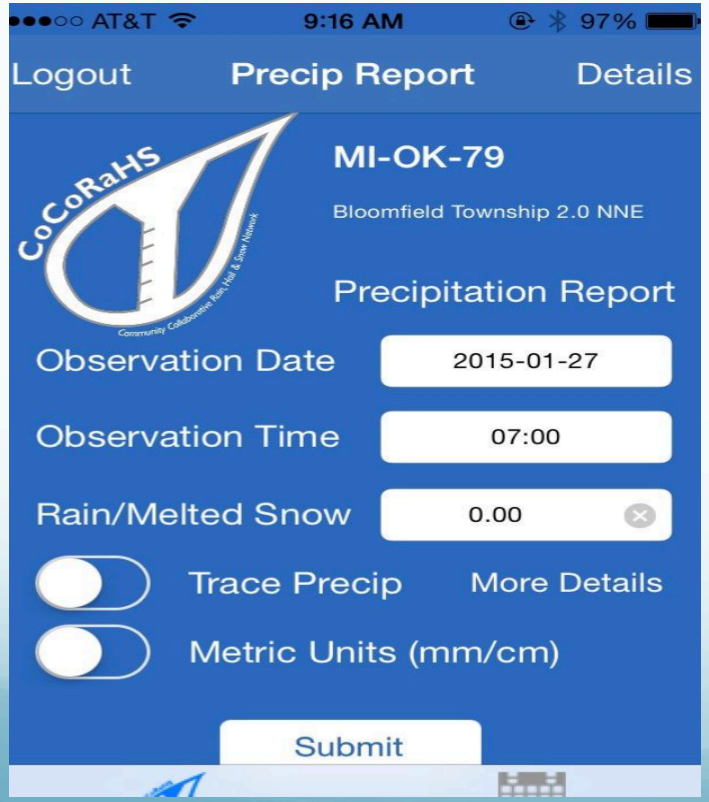
Online Training Slide Shows



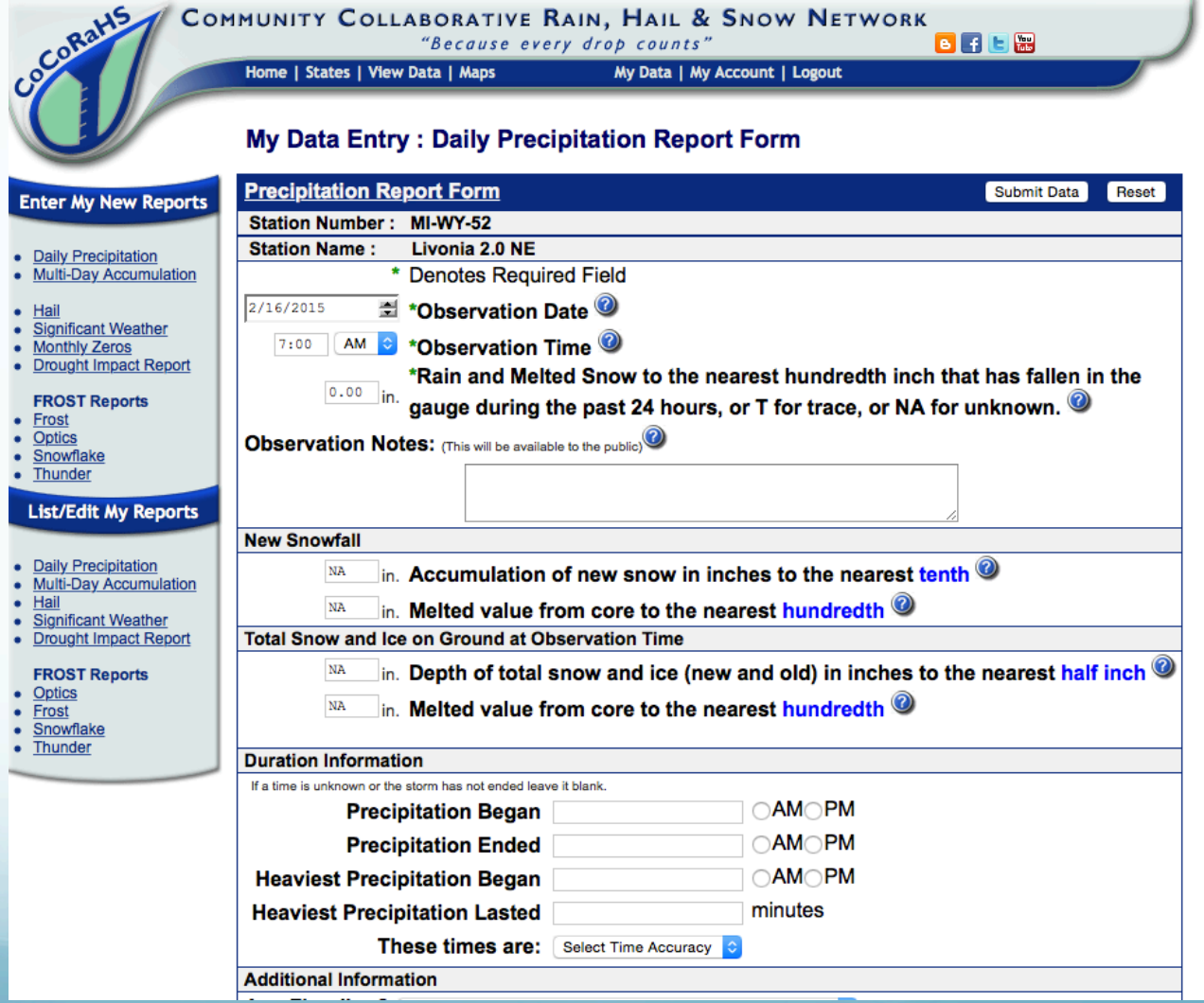
Online Training Videos



Recording Data - Mobile



Recording Data – Web-Based

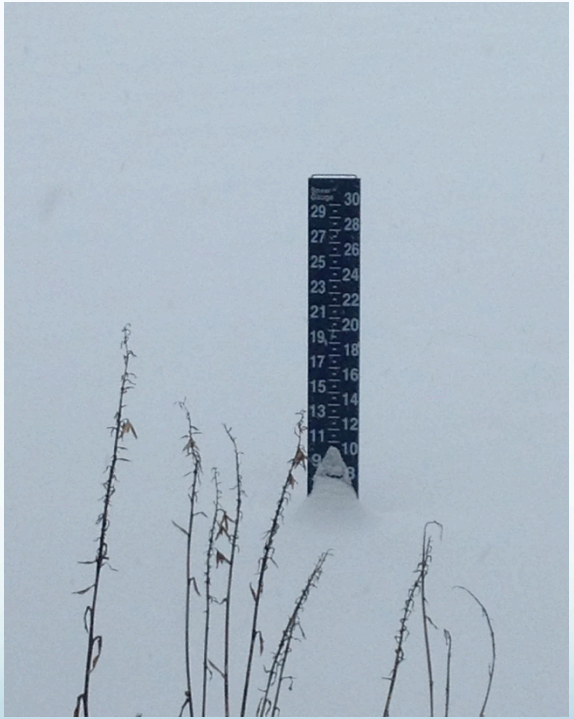


Data Reported by Stations

- Dave MI – WY – 52
- Susan MI – OK – 79
- Kathleen MI – OK – 85

Tools of the Trade – Rain

Tools of the Trade - Snow




Snow Gauge
29 30
27 28
25 26
23 24
21 22
19 20
17 18
15 16
13 14
11 12
9 10
7 8
5 6
4

It’s March Madness! Join Today

http://youtu.be/PiMQWL2TKIM

Lincoln Middle School
2014-2015
Mrs.Heikkinen's 8th Grade Students Warren, MI

Do You Remember August 11, 2014?

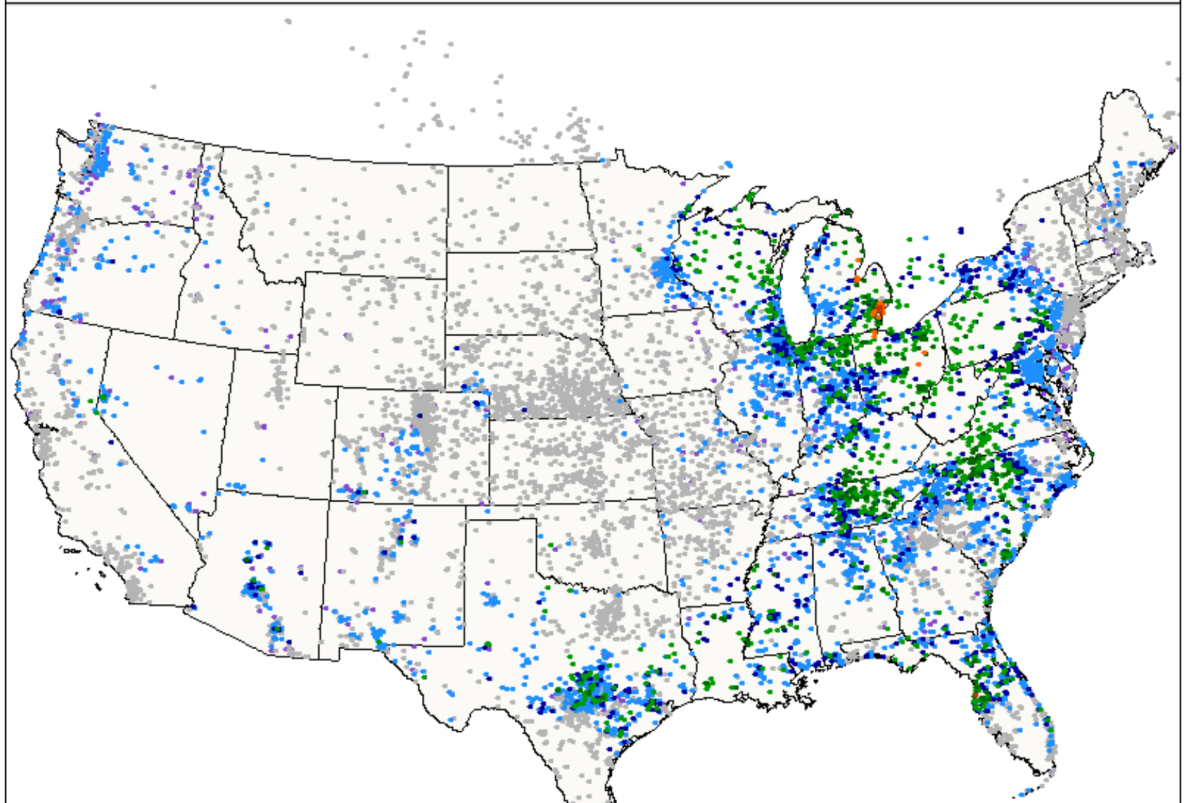
Citizen Scientists Investigate!

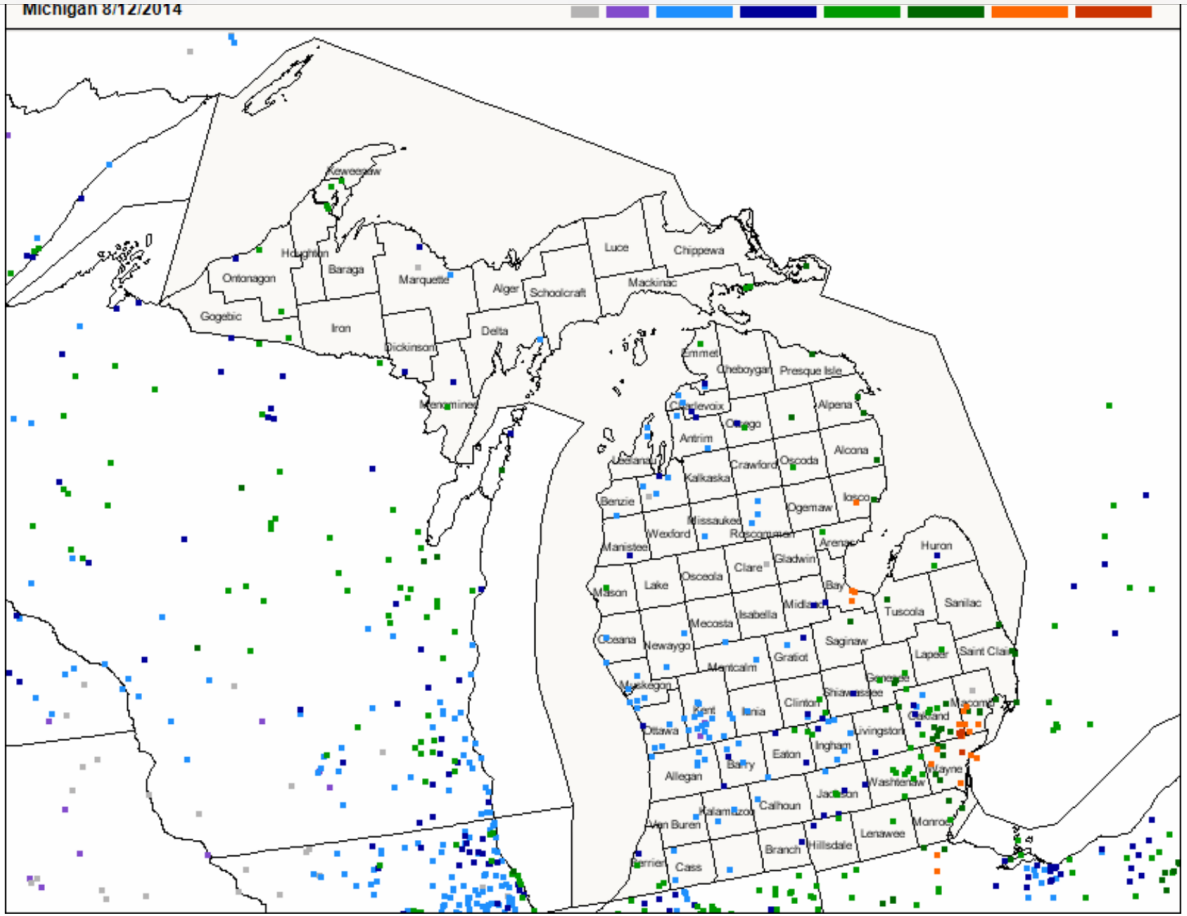
Maps : Daily Precipitation

Map Type	Map Location		Date	Colors	
Precipitation	National	No State Selected	8/12/2014	Standard	Get Map

Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am
USA 8/12/2014

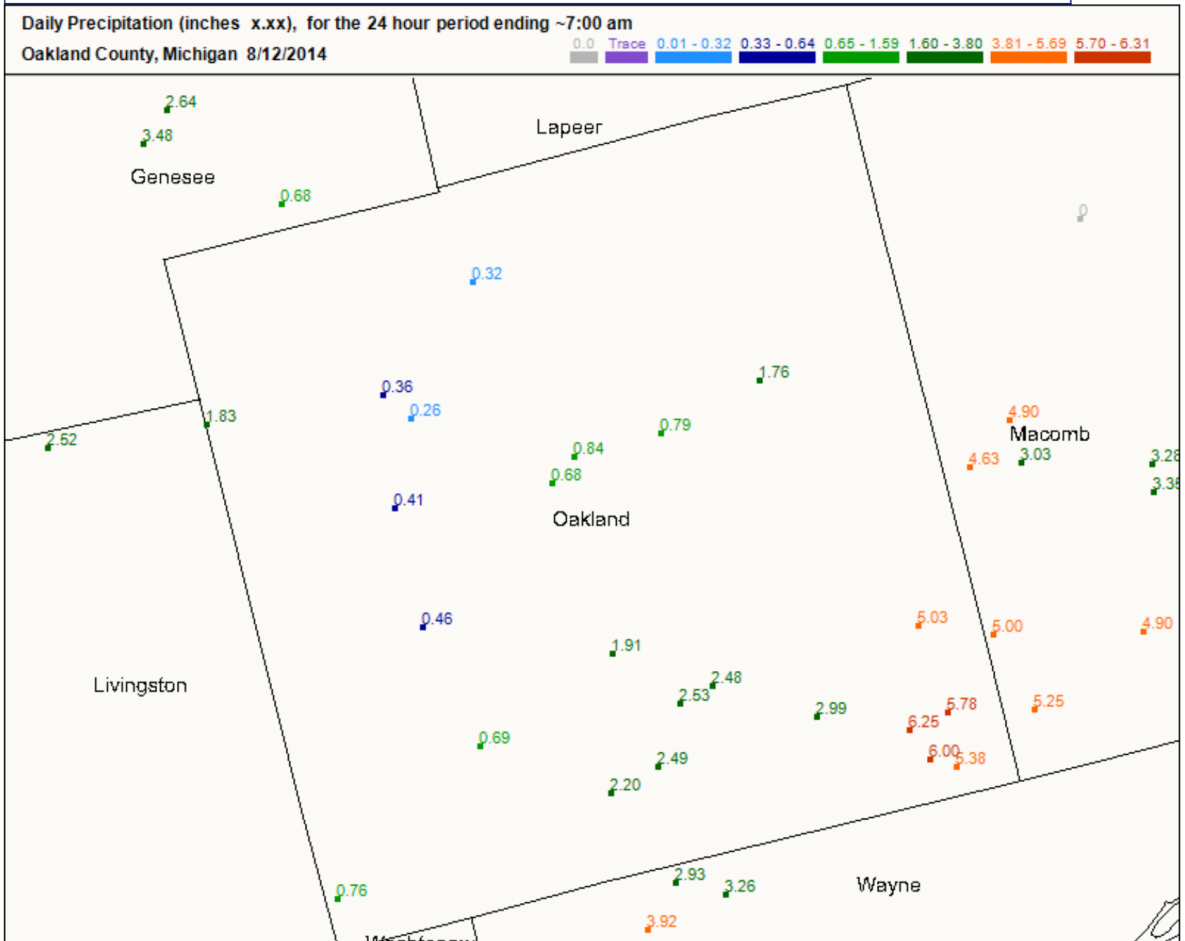
0.0 | Trace | 0.01 - 0.32 | 0.33 - 0.64 | 0.65 - 1.59 | 1.60 - 3.80 | 3.81 - 5.69 | 5.70 - 6.31





Map Type	Map Location	Date	Colors
Precipitation	Michigan / OK - Oakland	8/12/2014	Standard

Get Map



List Stations

FROST Data

- Frost
- Optics
- Snowflake
- Thunder

Main Menu

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- Contact Us
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Resources

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- Evapotranspiration

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

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- Message of the Day
- Data Analysis
- CoCoRaHS Blog
- Web Groups
- State Newsletters
- Master Gardener Guide
- State Climate Series
- WxTalk Webinars

		Number		in.	in.	in.		
8/12/2014	7:00 AM	MI-MG-19	North Muskegon 2.4 NW	0.13	NA	NA	MI	Muskegon
8/12/2014	7:00 AM	MI-NW-2	Grant 4.8 NW	0.32	NA	NA	MI	Newaygo
8/12/2014	7:00 AM	MI-NW-8	White Cloud 7.5 ENE	0.28	NA	NA	MI	Newaygo
8/12/2014	7:00 AM	MI-OK-12	West Bloomfield Township 2.8 SE	2.53	NA	NA	MI	Oakland
8/12/2014	7:00 AM	MI-OK-47	Bloomfield Township 3.1 SW	2.48	NA	NA	MI	Oakland
8/12/2014	7:00 AM	MI-OK-53	Wixom 1.3 NE	0.69	NA	NA	MI	Oakland
8/12/2014	7:00 AM	MI-OK-61	Davisburg 0.8 NNE	0.36	NA	NA	MI	Oakland
8/12/2014	7:00 AM	MI-OK-62	Lake Orion 4.3 SSE	1.76	NA	NA	MI	Oakland
8/12/2014	7:00 AM	MI-OK-70	Ferndale 0.3 NNW	5.38	NA	NA	MI	Oakland
8/12/2014	7:00 AM	MI-OK-80	Royal Oak 1.4 ESE	5.78	NA	NA	MI	Oakland
8/12/2014	7:00 AM	MI-OK-83	Farmington Hills 1.2 N	2.49	NA	NA	MI	Oakland
8/12/2014	7:00 AM	MI-OK-85	Troy 1.8 S	5.03	NA	NA	MI	Oakland
8/12/2014	7:00 AM	MI-OC-2	Montague 8.1 NW	0.03	0.0	NA	MI	Oceana
8/12/2014	7:00 AM	MI-OC-3	Hart 3 WSW	0.15	0.0	0.0	MI	Oceana
8/12/2014	7:00 AM	MI-OD-3	Luzerne 2.4 NE	0.65	NA	NA	MI	Oscoda
8/12/2014	7:00 AM	MI-OT-1	Gaylord 2.2 SE	0.96	0.0	0.0	MI	Otsego
8/12/2014	7:00 AM	MI-OW-26	Grand Haven 4.2 S	0.42	NA	NA	MI	Ottawa
8/12/2014	7:00 AM	MI-RS-4	Roscommon 4.7 SW	0.18	NA	NA	MI	Roscommon
8/12/2014	7:00 AM	MI-SC-7	Port Huron 2.0 SSW	1.94	NA	NA	MI	St. Clair
8/12/2014	7:00 AM	MI-SC-8	Algonac 0.4 SW	2.02	NA	NA	MI	St. Clair
8/12/2014	7:00 AM	MI-VB-4	Paw Paw 3.6 NNE	0.11	NA	NA	MI	Van Buren
8/12/2014	7:00 AM	MI-WS-3	Plymouth 5.4 W	1.08	NA	NA	MI	Washtenaw
8/12/2014	7:00 AM	MI-WS-7	Ann Arbor 3.1 SE	1.15	0.0	0.0	MI	Washtenaw
8/12/2014	7:00 AM	MI-WS-18	Ypsilanti 1.1 ENE	1.53	NA	NA	MI	Washtenaw
8/12/2014	7:00 AM	MI-WS-20	Ann Arbor 1.7 NNW	1.24	NA	NA	MI	Washtenaw
8/12/2014	7:00 AM	MI-WS-24	Ann Arbor 2.6 NNE	1.15	NA	NA	MI	Washtenaw
8/12/2014	7:00 AM	MI-WS-25	Saline 3.8 SSW	1.37	NA	NA	MI	Washtenaw
8/12/2014	7:00 AM	MI-WS-28	Dexter 0.3 ENE	0.73	NA	NA	MI	Washtenaw

- Master Gardener Guide
- State Climate Series
- WxTalk Webinars

- Sponsors
- Links
- CoCoRaHS Store

8/12/2014	7:00 AM	MI-KN-7	East Grand Rapids 0.7 SSW	T	0.0	0.0	MI	Kent
8/12/2014	7:00 AM	MI-KN-11	Lowell 1.4 ESE	0.04	0.0	NA	MI	Kent
8/12/2014	7:00 AM	MI-KN-14	Grandville 1.3 WSW	0.02	0.0	0.0	MI	Kent
8/12/2014	7:00 AM	MI-KN-17	Alto 4.5 SW	0.04	NA	NA	MI	Kent
8/12/2014	7:00 AM	MI-KN-31	Byron Center 2.9 NE	T	NA	NA	MI	Kent
8/12/2014	7:00 AM	MI-KN-39	Wyoming 0.5 NNE	0.02	NA	NA	MI	Kent
8/12/2014	7:00 AM	MI-KN-43	Caledonia 4.4 WNW	0.03	NA	NA	MI	Kent
8/12/2014	7:00 AM	MI-KN-64	Grand Rapids 3.8 SE	0.06	NA	NA	MI	Kent
8/12/2014	7:00 AM	MI-KN-65	Belmont 1.0 WNW	0.13	NA	NA	MI	Kent
8/12/2014	7:00 AM	MI-LP-1	Lum 1.0 NW	0.96	NA	NA	MI	Lapeer
8/12/2014	7:00 AM	MI-LL-3	Northport 0.1 SW	0.04	NA	NA	MI	Leelanau
8/12/2014	7:00 AM	MI-LN-7	Adrian 5.2 NE	1.47	NA	NA	MI	Lenawee
8/12/2014	7:00 AM	MI-MB-7	Shelby 0.4 SSE	4.90	NA	NA	MI	Macomb
8/12/2014	7:00 AM	MI-MB-9	New Baltimore 0.4 SSE	2.34	NA	NA	MI	Macomb
8/12/2014	7:00 AM	MI-MB-16	Clinton 2.3 N	3.28	NA	NA	MI	Macomb
8/12/2014	7:00 AM	MI-MB-44	Warren 1.6 W	5.25	NA	NA	MI	Macomb
8/12/2014	7:00 AM	MI-MQ-1	Marquette 5.5 SSE	0.23	NA	NA	MI	Marquette
8/12/2014	7:00 AM	MI-MQ-15	Marquette 16.0 NW	0.52	NA	NA	MI	Marquette
8/12/2014	7:00 AM	MI-MD-4	Midland 4.4 W	0.58	NA	NA	MI	Midland
8/12/2014	7:00 AM	MI-MK-1	Lake City 5.0 SSW	0.23	NA	NA	MI	Missaukee
8/12/2014	7:00 AM	MI-MR-1	Newport 3.1 SE	2.08	NA	NA	MI	Monroe
8/12/2014	7:00 AM	MI-MR-4	Monroe 3.1 SW	1.55	NA	NA	MI	Monroe
8/12/2014	7:00 AM	MI-MT-5	Stanton 5.0 ENE	0.07	NA	NA	MI	Montcalm
8/12/2014	7:00 AM	MI-MY-2	Atlanta 0.9 SW	1.94	NA	NA	MI	Montmorency
8/12/2014	7:00 AM	MI-MG-12	Norton Shores 3.0 WNW	0.26	NA	NA	MI	Muskegon
8/12/2014	7:00 AM	MI-MG-18	Norton Shores 2.3 SSE	0.24	NA	NA	MI	Muskegon

Data Leads to Investigation

Integrates the GLOBE Project (talk about later) with CoCoRaHS data.

School site study for 10 days to compare and contrast current data with August 11 flood.

Atmosphere Investigation

Data Sheet

School Name: Lincoln Middle School 10/7 - 10/15

Day of the week	T	W	TH	F	M	T	W
Date	10/7	10/8	10/9	10/10	10/13	10/14	10/15
Local time (hour:min)	11:20	10:58	1:51	12:32	10:23	11:30	10:22
Universal time (hour:min)	2:20 pm	2:10 pm	5:01 pm	4:32 pm	2:23 pm	3:30 pm	2:22 pm
Observer names							

Cloud Type (Check all types seen)

	T	W	TH	F	M	T	W
Cirrus	☐	☐	☐	☐	☐	☐	☐
Cirrostratus	☐	☐	☐	☐	☐	☐	☐
Cirrocumulus	☐	☐	☐	☐	☐	☐	☐
Altostratus	☐	☐	☐	☐	☐	☐	☐
Altocumulus	☐	☐	☐	☐	☐	☐	☐
Stratus	■	☐	☐	☐	■	■	■
Stratocumulus	☐	☐	☐	■	☐	☐	☐
Cumulus	☐	☐	☐	■	☐	☐	☐
Nimbostratus	☐	☐	☐	☐	☐	☐	☐
Cumulonimbus	☐	☐	☐	☐	☐	☐	☐

Cloud Cover (Check one)

	T	W	TH	F	M	T	W
No clouds (0%)	☐	☐	☐	☐	☐	☐	☐
Clear (0% - 10%)	☐	■	☐	☐	☐	☐	☐
Isolated (10% - 25%)	☐	☐	■	☐	☐	☐	☐
Scattered (25% - 50%)	☐	☐	☐	■	☐	☐	☐
Broken (50% - 90%)	☐	☐	☐	☐	☐	☐	☐
Overcast (90% - 100%)	■	☐	☐	☐	■	■	■
Sky obscured	☐	☐	☐	☐	☐	☐	☐

If Sky Obscured (Check all that apply)

	T	W	TH	F	M	T	W
Fog	☐	☐	☐	☐	☐	☐	☐
Smoke	☐	☐	☐	☐	☐	☐	☐
Haze	☐	☐	☐	☐	☐	☐	☐
Volcanic ash	☐	☐	☐	☐	☐	☐	☐
Dust	☐	☐	☐	☐	☐	☐	☐
Sand	☐	☐	☐	☐	☐	☐	☐
Spray	☐	☐	☐	☐	☐	☐	☐
Heavy rain	☐	☐	☐	☐	☐	☐	☐
Heavy snow	☐	☐	☐	☐	☐	☐	☐
Blowing snow	☐	☐	☐	☐	☐	☐	☐

School Name: _____

Day of the week	T	W	TH	F	M	T	W
Date	10/7	10/8	10/9	10/10	10/13	10/14	10/15

Precipitation pH

Measurement method for pH: ☐ paper ☐ pen ☐ meter

	T	W	TH	F	M	T	W
pH of the rain or melted snow: Sample 1	ph4			ph4	ph4	ph3	ph4
pH of the rain or melted snow: Sample 2	ph4			ph4	ph5	ph4	ph4
pH of the rain or melted snow: Sample 3	ph4			ph4	ph4	ph4	ph4
pH of the rain or melted snow: Average	ph4			ph4	ph4	ph4	ph4
pH of the melted snowpack: Sample 1							
pH of the melted snowpack: Sample 2							
pH of the melted snowpack: Sample 3							
pH of the melted snowpack: Average							

Relative Humidity

	T	W	TH	F	M	T	W
Dry bulb temperature (°C) - Sling Psychrometer							
Wet bulb temperature (°C) - Sling Psychrometer							
Relative humidity (%)	81%	60%	55%	50%	83%	78%	80%

Maximum, Minimum, and Current Temperatures

	T	W	TH	F	M	T	W
Current air temperature: (°C)	56°F	54°F	57°F	56°F	60°F	64°F	59°F
Maximum daily air temperature: (°C)	63°F	58°F	58°F	56°F	63°F	73°F	67°F
Minimum daily air temperature: (°C)	46°F	48°F	38°F	37°F	53°F	60°F	57°F

Comments (Unusual conditions):

School Name: _____

Day of the week	T	W	TH	F	M	T	W
Date	10/7	10/8	10/9	10/10	10/13	10/14	10/15

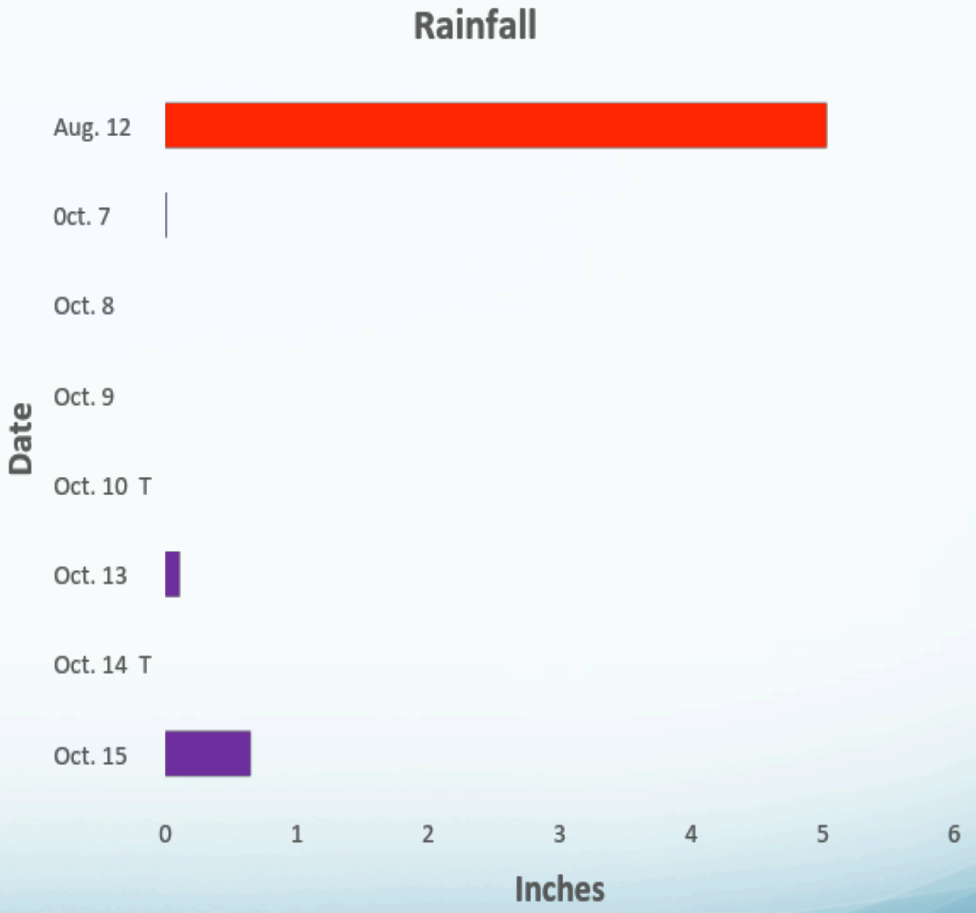
Rainfall

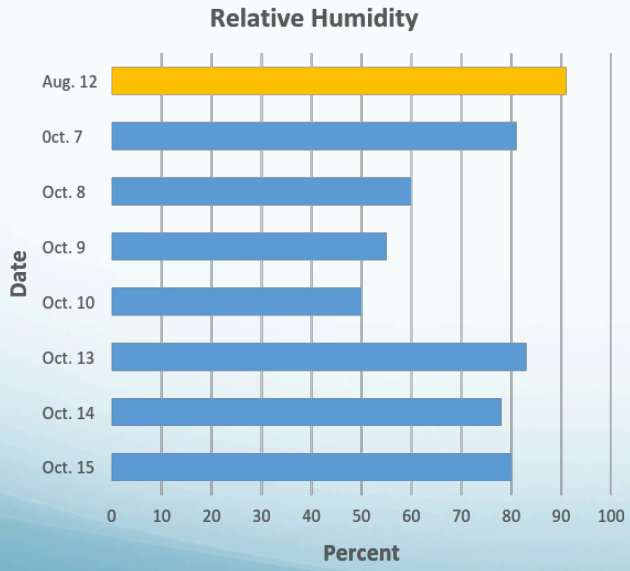
	T	W	TH	F	M	T	W
Number of days rain has accumulated	1	1	1	1	2	2	3
Rainwater in rain gauge (mm)*	.01	0.0	0.0	0.0	.11	0.0	0.65

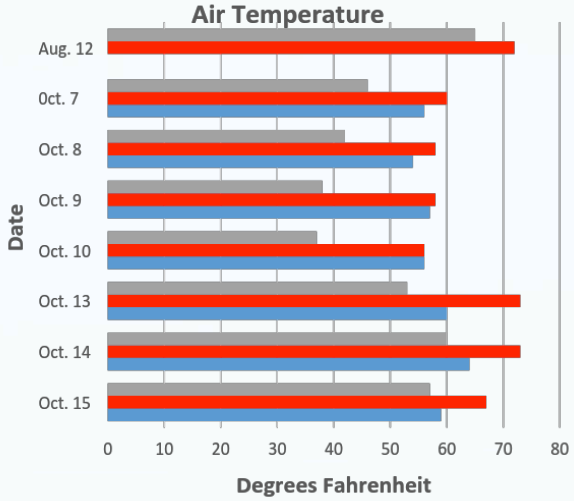
* Remember: Record 0.0 when there has been no rainfall or snowfall;
M for missing if you were not able to take an accurate reading;
T for trace if the amount of rainfall is less than 0.5 mm

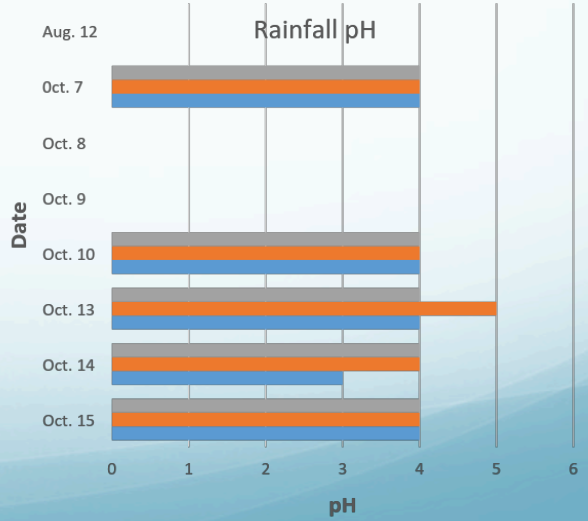
Solid Precipitation

	T	W	TH	F	M	T	W
Total depth of snowpack on the ground: Sample 1 (mm)							
Total depth of snowpack on the ground: Sample 2 (mm)							
Total depth of snowpack on the ground: Sample 3 (mm)							
Number of days snow has accumulated							


Rainfall
Aug. 12
Oct. 7
Oct. 8
Oct. 9
Oct. 10 T
Oct. 13
Oct. 14 T
Oct. 15
Date
0
1
2
3
4
5
6
Inches


Relative Humidity
Aug. 12
0ct. 7
Oct. 8
Oct. 9
Oct. 10
Oct. 13
Oct. 14
Oct. 15
Date
0 10 20 30 40 50 60 70 80 90 100
Percent


Air Temperature
Aug. 12
0ct. 7
Oct. 8
Oct. 9
Oct. 10
Oct. 13
Oct. 14
Oct. 15
Date
0 10 20 30 40 50 60 70 80
Degrees Fahrenheit


Rainfall pH
Aug. 12
0ct. 7
Oct. 8
Oct. 9
Oct. 10
Oct. 13
Oct. 14
Oct. 15
Date
0 1 2 3 4 5 6
pH

Sit Back, Take a Minute, Reflect

Welcome to the GLOBE Program

http://www.globe.gov/globe-videos/home-trailer.mp4

globe.gov

The Global Learning and Observations to Benefit the Environment (GLOBE) program is a worldwide hands-on, primary and secondary school-based science and education program.

globe.gov

GLOBE connects students to GLOBE Partner Satellite Missions.

Field Campaigns

Join

NASA Satellite Overpass Calculator

SMAP

GPM

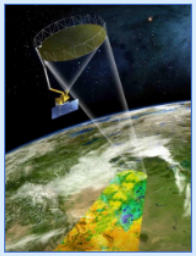
CloudSat

CALIPSO

Satellite Partnerships

2015 will be an exciting year for NASA Missions and GLOBE! Here are four opportunities to take part in GLOBE Campaigns related to NASA Missions: Soil Moisture Active Passive Mission (SMAP), Global Precipitation Measurement (GPM), CloudSat and CALIPSO.

To stay connected to the GLOBE Partner Satellite Missions, be sure to sign up to receive communications about the missions.



Soil Moisture Active Passive Mission (SMAP)

The NASA Soil Moisture Active Passive or SMAP Mission launched on 31 January 2015. Once in orbit and checked out, SMAP will provide measurements of soil moisture and freeze/thaw state. The SMAP Mission will produce daily maps of soil moisture with global coverage every three days.

The SMAP team is looking for GLOBE Program students to take measurements at their schools after the satellite mission is launched. Once the satellite is launched, it will be several months until the satellite sends soil moisture data back to Earth. Once satellite data are available, students will be able to compare these remotely sensed data to the actual soil moisture data that they collect at their school locations. Schools will be able to see how frequently their location will be viewed by SMAP within its 1000-km wide swath every 8 days (SMAP is in an exact 8-day repeat orbit). To see when the satellite will pass over/near your school, you can use this SMAP Orbit Overpass Calculator Tool.

You will have the chance to provide real science data that will help NASA scientists validate real SMAP satellite data. Those schools that participate frequently will interact with actual NASA scientists.

THE GLOBE COMMUNITY, THE SMAP TEAM AND NASA NEED YOUR DATA! YOUR PARTICIPATION IN THE SMAP-GLOBE PROGRAM PARTNERSHIP IS VITAL TO UNDERSTANDING OUR PLANET'S SOIL MOISTURE!

JOIN US TODAY! Get started HERE.

Global Precipitation Measurement (GPM)

The Global Precipitation Measurement (GPM) satellite mission "will use multiple satellites orbiting Earth to collect rain, snow and other precipitation data worldwide every three hours." In GLOBE, students also take regular precipitation data. Updates here.

Field Campaigns

Join

NASA Satellite Overpass Calculator

SMAP

GPM

CloudSat

CALIPSO

Satellite Partnerships

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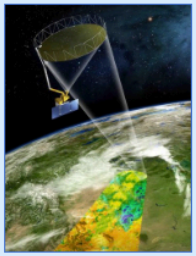

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JOIN US TODAY! Get started HERE.

Global Precipitation Measurement (GPM)

The Global Precipitation Measurement (GPM) satellite mission "will use multiple satellites orbiting Earth to collect rain, snow and other precipitation data worldwide every three hours." In GLOBE, students also take regular precipitation data. Updates here.

Let's Take a Look

https://www.youtube.com/watch?v=6orv6v4ZLjQ

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION | GODDARD SPACE FLIGHT CENTER

Search

PRECIPITATION MEASUREMENT MISSIONS

Home | GPM | TRMM | Science | Applications | Meetings | Data Access | Resources | Education

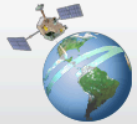
GPM Launches Field Campaign for Students

This spring, students worldwide are invited to grab rain gauges and learn how scientists use ground measurements to validate satellite precipitation data. NASA's Global Precipitation Measurement, or GPM, mission is partnering with the Global Learning and Observations to Benefit the Environment (GLOBE) program to conduct a field campaign where students will measure rain and snow in their hometowns from Feb. 1 through mid-April 2015 and then analyze the data...

FEATURED ARTICLES 1 2 3 4 5

TRMM

TROPICAL RAINFALL MEASURING MISSION



Launched by NASA and JAXA in 1997, TRMM carries the first on-orbit active/passive instrument package to study the intensity and structure of tropical rainfall. Get data

GPM

GLOBAL PRECIPITATION MEASUREMENT

An international satellite mission launched by NASA and JAXA on Feb. 27, 2014, that will set new standards for precipitation measurements worldwide using a network of satellites united by the GPM Core Observatory. Get data

MISSION UPDATES

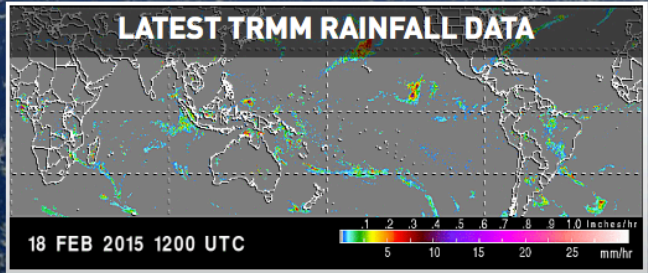
Thursday, December 4, 2014

Updated GPM Radiometer Products

The Precipitation Processing System (PPS) has begun producing updated GPM radiometer products as of 12/4/2014 due to an error discovered in the calculation of the Sun Angle in the PPS Geolocation...
More...

1 of 83 ››

LATEST TRMM RAINFALL DATA

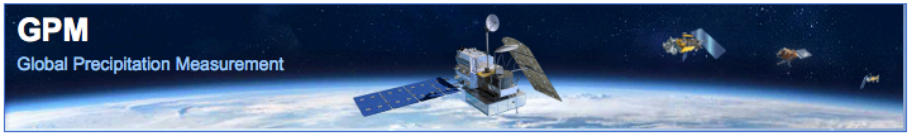


Download TRMM Data | Extreme Events | Precipitation Maps

GPM Data | Launch | Multimedia | Science

GPM

The Global Precipitation Measurement (GPM) Satellite Mission



The GPM Mission

NASA's Global Precipitation Measurement Mission (GPM) measures precipitation from space. GPM launched from the Tanegashima Space Center, Japan on February 27, 2014. GPM mission data will advance our understanding of water and energy cycles and extend the use of precipitation data to directly benefit society.

The way satellites "see" rain is not the same as the way rain gauges collect precipitation on the ground, and to make sure the algorithms used by the satellites to provide rain totals are working well, we need to do what is called ground validation. Using a simple rain gauge, teachers and students can help collect data to explore the question, "How do ground-based observations compare to satellite rainfall estimates?" For more information on the GPM-GLOBE Student Field Campaign, click on the "How to Participate" and other links on the left.

Students reading a rain gauge during an outdoor education program in Montgomery County, Maryland.
Image Credit: NASA/Dorian Janney

GPM

How to Participate

You and your students can join the GLOBE community in participating in NASA's Global Precipitation Measurement (GPM) Mission.

To get started, use the following links to download helpful documents:

1. GPM Precipitation Student Field Campaign Teacher Participation Guide
2. Overview presentation about the field campaign and GPM Mission
3. Instrument Construction, Site Selection and Set-Up Guide
4. Precipitation Protocols
5. GPM Precipitation Field Campaign Data Sheet (or the Atmosphere Investigation Integrated 1-Day Data Sheet can be used if other types of atmosphere observations will be made at the same time

Purpose:

The GPM Mission looks at one important aspect of the water cycle – precipitation. However, the way satellites "see" rain is not the same as the way rain gauges collect precipitation on the ground, and to make sure the algorithms used by the satellites to provide rain totals are working well, we need to do what is called ground validation. This campaign is an opportunity for students to participate in ground validation for the GPM satellite, looking at the question, "How do ground-based observations compare to satellite rainfall estimates?" Students will also be able to compare their data with that of participating schools around the globe, networks of "official" rain gauges, as well as to long-term climatological data, and look for patterns and anomalies.

Timing:

February 1st through April 15th, 2015. Rain gauges should be in place by Friday, January 30th to start data collection the next week. We prefer that you collect daily data during the entire time frame if at all possible, but even a week at the beginning of each month will be helpful. Remember that multi-day accumulations can be submitted over weekends or other periods during which daily observations were not possible.

Citizen Science

The collection and analysis of data relating to the natural world by members of the general public, typically as part of a collaborative project with professional scientists.

K12Science

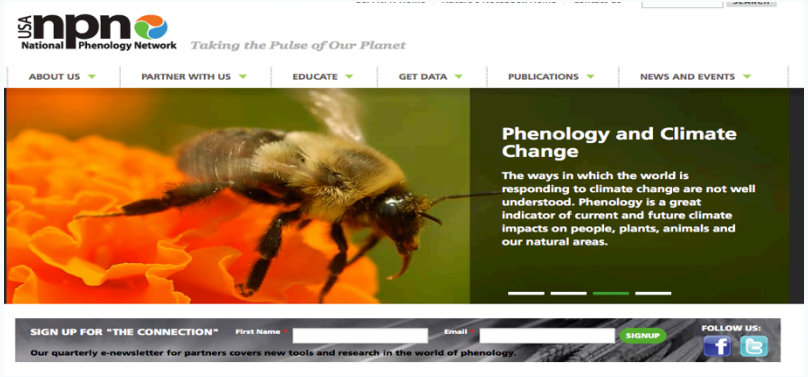
2012

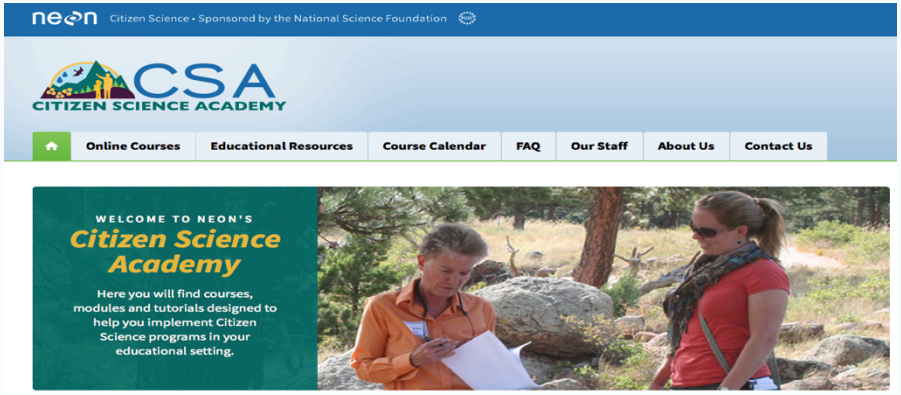
MIDDLE SCHOOL SCIENCE MINUTE- CITIZEN SCIENCE 12/7/12

I was recently reading the November, 2012 issue of Science Scope, a publication of the National Science Teachers Association. In the magazine, Jennifer Fee and Nancy Trautmann, wrote an article entitled "Connecting to Your Community Through Birds and Citizen Science." Within the article they explained what is meant by the term "Citizen Science." They defined a citizen scientist as a person who collaborates with scientists to gather data on projects and contributes to scientific research.

Please click on the PLAY button to enjoy this podcast.

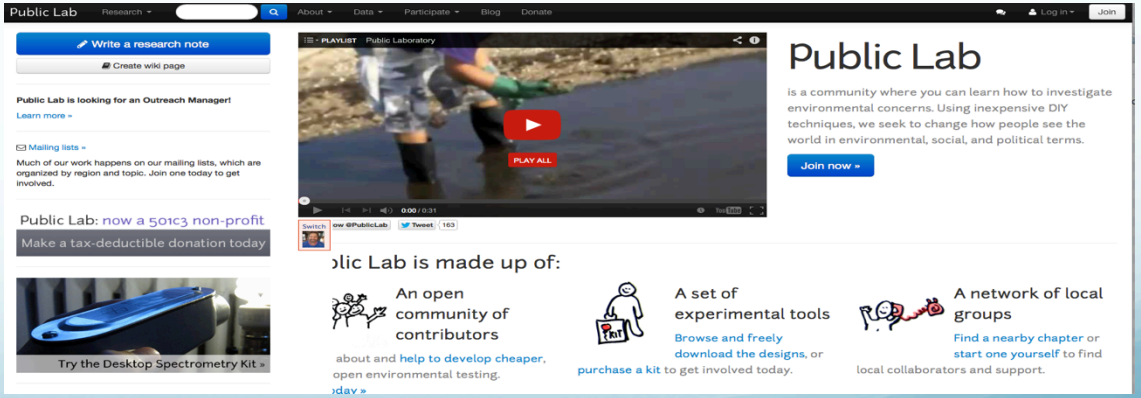
< Previous Next >





But how about?

* Hobby Science
* Project-Based Science
* Public Science



http://citizenscienceacademy.org

Spring Term (April 7 – May 8)

CSA 501a: Introduction to Project BudBurst for *Formal* Educators

CSA 501b: Introduction to Project BudBurst for *Informal* Educators *(Formerly CSA 551)*

CSA 502: Using Project BudBurst Data in An Educational Setting

CSA 520: Introduction to Citizen Science: Explorations in Educational Settings

Audubon
CHRISTMAS BIRD COUNT

GALAXY ZOO

The Public Laboratory
for Open Technology & Science

Citizen Science Projects and Beyond

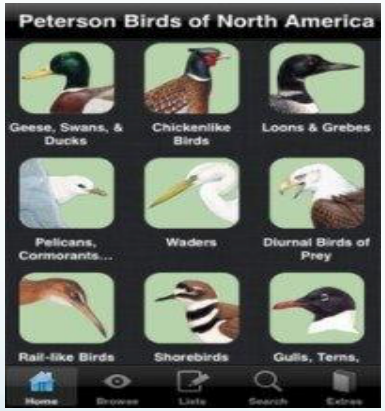
Project BudBurst
Timing is everything!

S'COOL
STUDENTS' CLOUD OBSERVATIONS ON-LINE
CERES
NASA

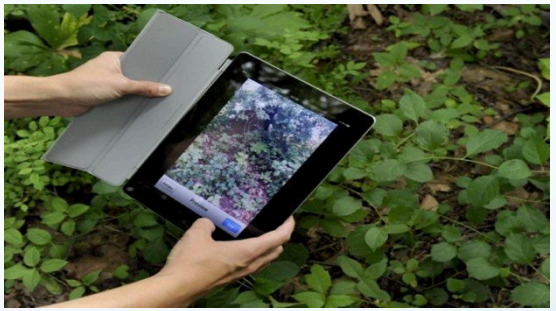
Bird Count — Bird Observations
Public Laboratory — Engineering
Galaxy Zoo — Galaxies
WeatherFlow — Wind
Journey North — Monarchs, Hummingbirds, Tulips, Robins
S'COOL — Clouds
GLOBE at Night — Light Pollution
Wildlife Tracker — Wildlife: Motion Detecting Cameras
Project Budburst — Plants

JOURNEY NORTH
A Global Study of Wildlife Migration and Seasonal Change

Citizen Science and Beyond Apps



Secchi
mPing
What's Invasive
Loss of the Night
Marine Debris Tracker
NoiseTube
Project Noah
iNaturalist



PARTICIPATION IN SCIENTIFIC RESEARCH: LEARNING FROM CITIZEN SCIENCE

Instead of teaching young people about science, we want them to do science. That's one of the central notions in teaching science as inquiry and it's a core part of the ***Next Generation Science Standards***. Said that way it sounds simple, but when we step back and try to articulate exactly what doing science means it becomes a bit tricky. Is it collecting data? Is it developing research questions? Is it defending and advancing arguments based on evidence? The short answer to each of these questions is "Yes, and…". Science is a sophisticated process through which we understand the natural and designed world. Any definition of the science we want people, as full citizens in our democracy, to engage in is going to need to reflect that sophistication.

The Smithsonian

Presentation Objectives

- I can investigate Citizen Science Projects.
- I can use technology to learn and collaborate on Citizen Science Projects.
- I can formulate real-world STEM connections beyond the classroom.

Citizen Science: Precipitation

David Bydlowski, Susan Croskey, Kathleen Heikkinen

‘‘Super Science for Super Teachers – Continuing Changing the Equation’’ (S3T-C2tE) – Partnership between Madonna University, Lawrence Technological University and the Michigan Department of Education