The Hoosier Observer

Indiana CoCoRaHS monthly e-newsletter

December 2023

November 2023 Statistics

Total observers reporting	519
Observers with no missing reports	325
Percent of total	62
Average Daily Reports per Day	417
Max # of Daily Reports and Day	447/22
Significant Weather Reports	0
Condition Monitoring Reports	35
E-T Reports	0

December Coordinator Update

November was a very quiet month as daily reports fell off a bit with our seasonal observers bringing in their gauges for the winter months. We encourage folks to continue observing as we approach the snowier season (if it ever arrives!). If that's not possible, feel free to report zeros during the drier stretches.

To highlight just how quiet November was, we had 0 Significant Weather Reports. This was the first time in at least 5 years that there wasn't something weather-worthy to report. If you don't know what they are, check them out: Significant Weather Report. Use this form to report

November 2023 Precipitation

The statewide total precipitation for November 2023 was 0.75 inches, which was 2.63 inches below normal or 22 percent of normal. In fact, November 2023 was Indiana's third driest November on record, which trailed behind 1904 (0.36 inches) and 1917 (0.52 inches). In November 2023, the entire state experienced precipitation that was between 5 and 75 percent of normal (Figure 1). Western Posey County recorded less than 10 percent of normal precipitation for the month.

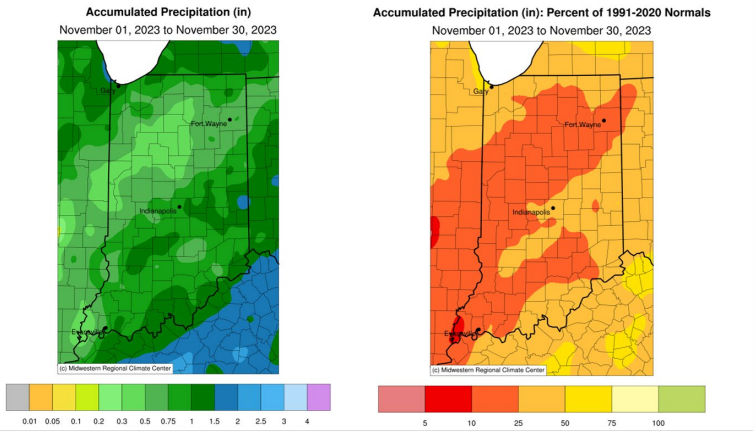


Figure 1: Left - Accumulated precipitation for November 2023. Right - Accumulated precipitation represented as the percent of 1991-2020 climatological average. Click for a larger image.

The National Centers for Environmental Information has a US Streaks Tool where you can plot the number of consecutive days without precipitation. Figure 2 displays a screenshot of the consecutive days with no precipitation as of November 20, 2023. Garrett, IN, located near Ft. Wayne, went 21 days without precipitation. This was two days shy of the record of 23 days in May 2012. Peru, Indiana had 20 consecutive days without precipitation, which was eight days short of the 2008 record. Fourteen stations total had eleven or more days without precipitation.

heavy rain or snow events.

We didn't have any new observers over the last month, so now is a great time to talk to your neighbors and friends to get them signed up!

Archived Newsletters

If you are ever interested in viewing past issues of *The Hoosier Observer*, visit the State Newsletter Archive on the CoCoRaHS website and scroll down to Indiana. You may also access other state newsletters from this website as well.

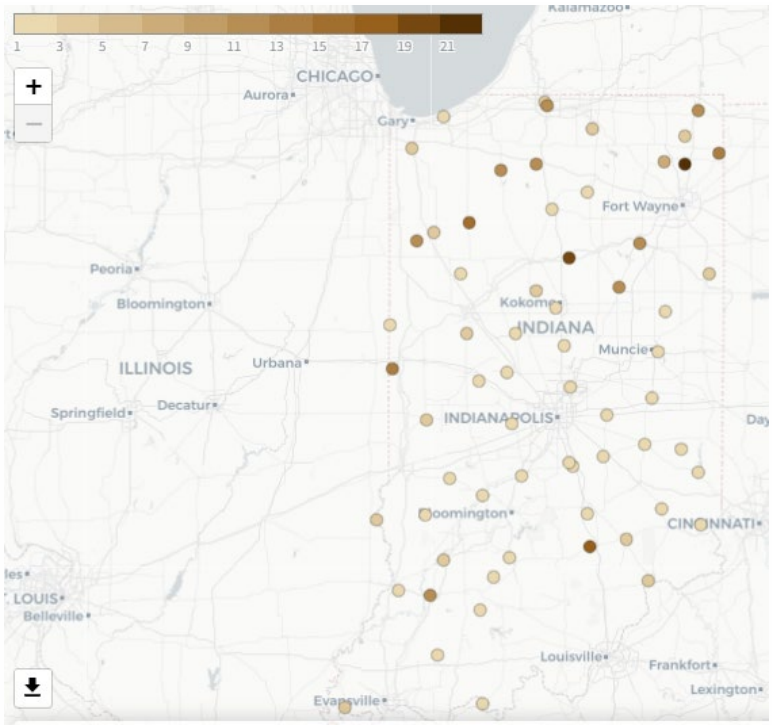


Figure 2: Consecutive days without precipitation as of November 20, 2023. Data obtained through NCEI US Streaks Tool.

High and low precipitation for November 2023:

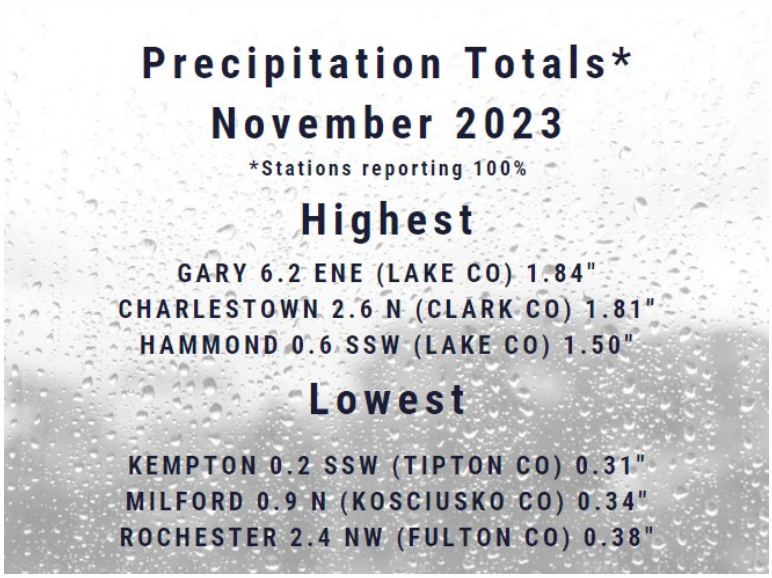
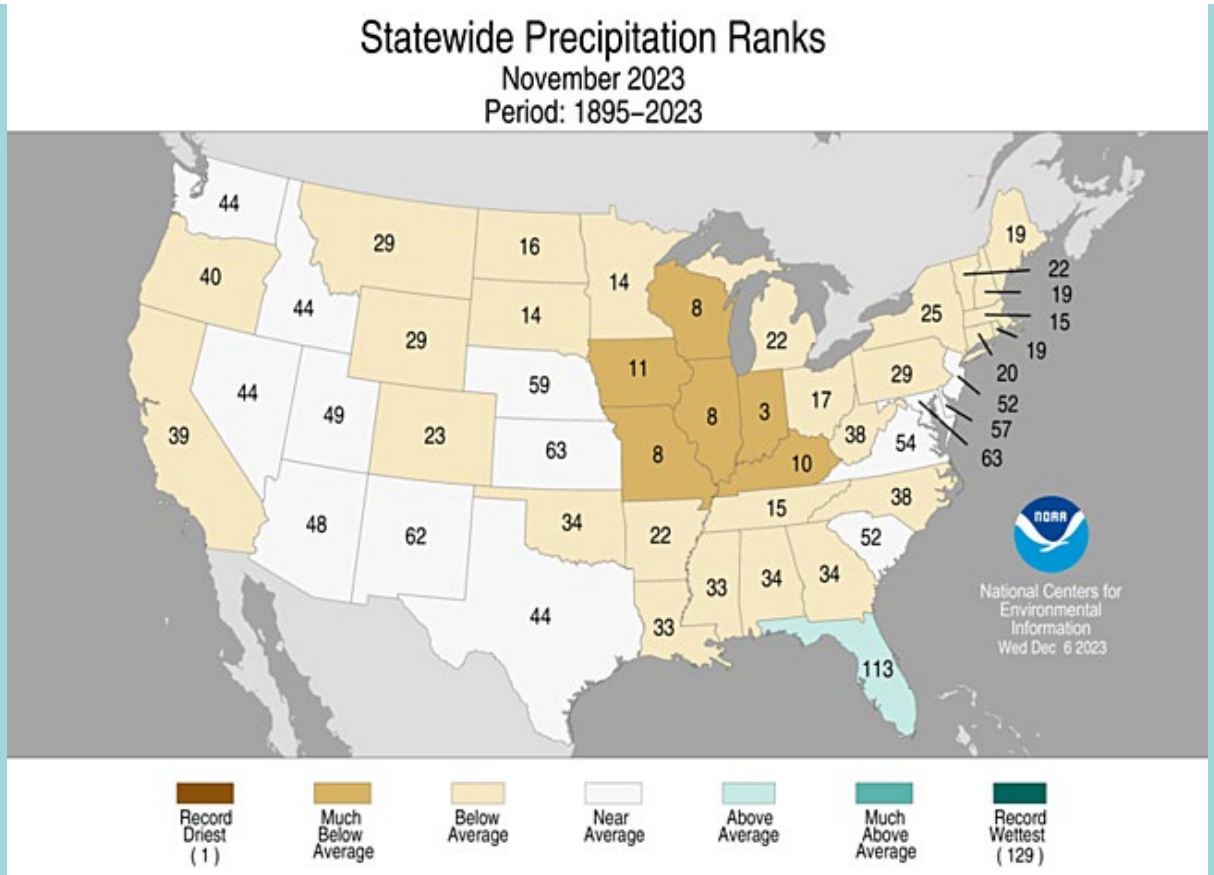


Figure 3: Highest and lowest precipitation totals for CoCoRaHS observers reporting 100% of data for November 2023. Click for larger image.

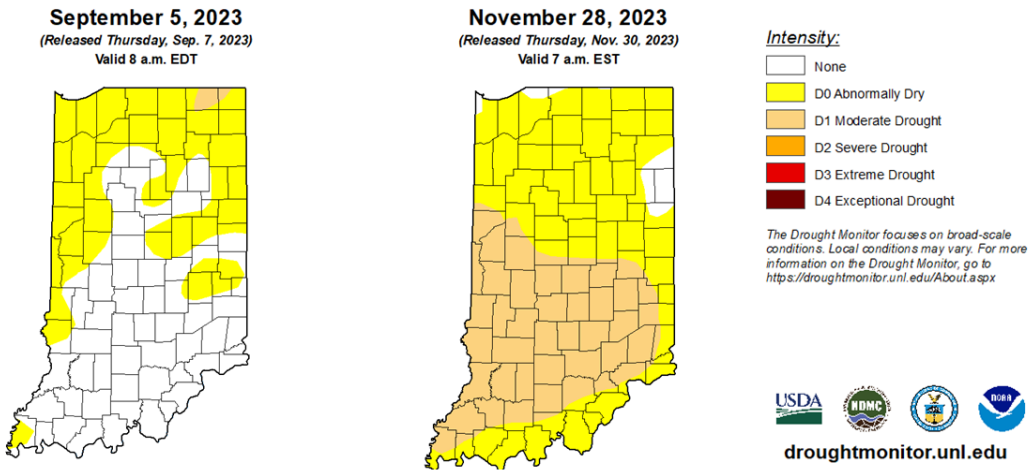
We have a great group of CoCoRaHS volunteers in Indiana. We'd like to wish all of you a happy and peaceful holiday season. If you are going to be traveling over the holidays, please be safe! We are looking forward to your participation in 2024.

Fall 2023 Climate Summary

Meteorological Fall is somehow already over, and the records are in. Despite periods of intense heat in September and October, both months came out close to average. September had a mean temperature of 67°F, which was only 1°F above normal. In over 100 years of records, this came out as just slightly above normal, ranking as the 46th warmest September on record statewide. October was also only slightly above average, ranking 29th with a mean temperature 56.4°F. November ranked as the 35th warmest, tying the record for November 2022 at 43.2°F.



Precipitation was by far more noteworthy. September ranked as the 14th driest on record, with the statewide mean precipitation total at 1.37". That's over 3 inches below normal and only 42 percent of normal precipitation for September. October was much more plentiful and near normal for precipitation, with 3.43 inches of rain for the month. The abundant precipitation didn't last—November ended as the 3rd driest on record, with only 22 percent of normal rainfall and 0.75 inches statewide.

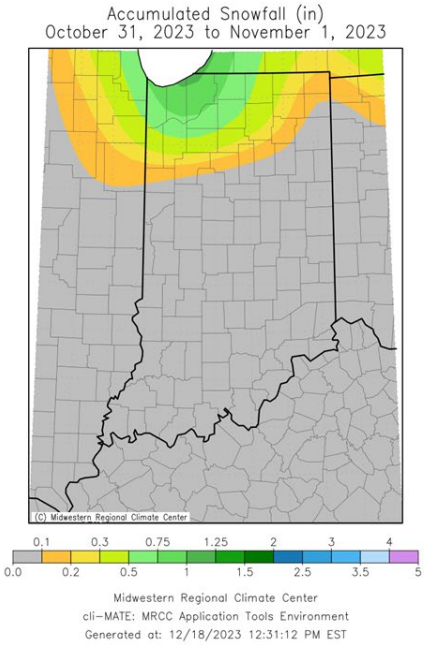


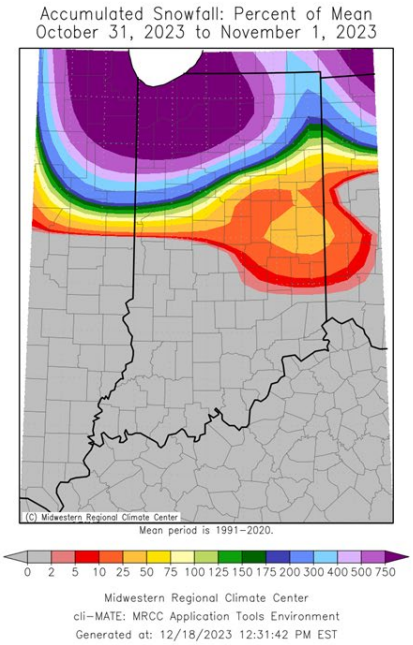
Statistics Comparison

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
2023-09-05	56.85	43.15	0.83	0.00	0.00	0.00	44
2023-11-28	3.14	96.86	44.05	0.00	0.00	0.00	141
Change	-53.71	53.71	43.22	0.00	0.00	0.00	97

The US Drought Monitor mirrored this pattern all season. The state started meteorological fall with abnormally dry conditions (D0) confined to mostly places north of Indianapolis on

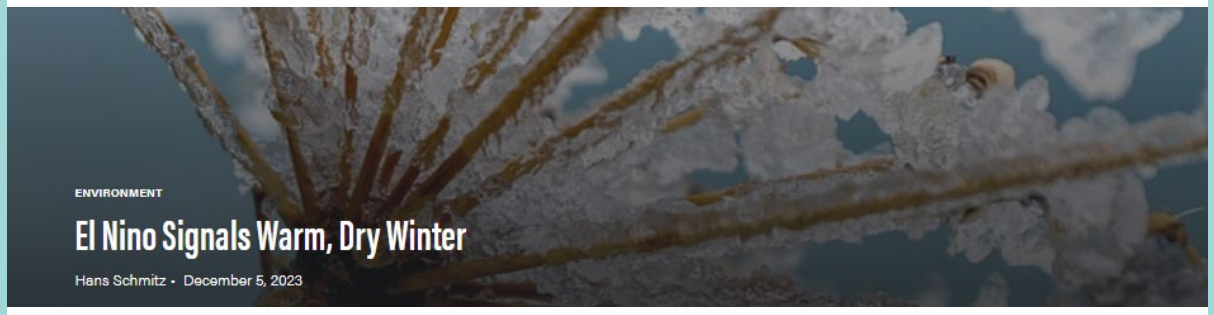
September 5 (above, left). By the first week of October, a dry September had pushed virtually the entire state into moderate drought (D1). Some improvement was made across northern Indiana by Halloween, but that reversed by the beginning of December, with most of the state in D0 or D1 by November's end (above, right).





While it's been dry as a bone much of the season, Halloween itself was quite spooky due to snow in several locations (above). South Bend measured 1.4 inches of snow on October 31, which fell just short of the record 1.6 inches in 1954. LaPorte recorded 3.5 inches, which set a new daily record for October 31. Places further south, like Kokomo and Lafayette, did indeed see flurries, but it wasn't enough to record measurable snowfall.

2023-24 Winter Outlook



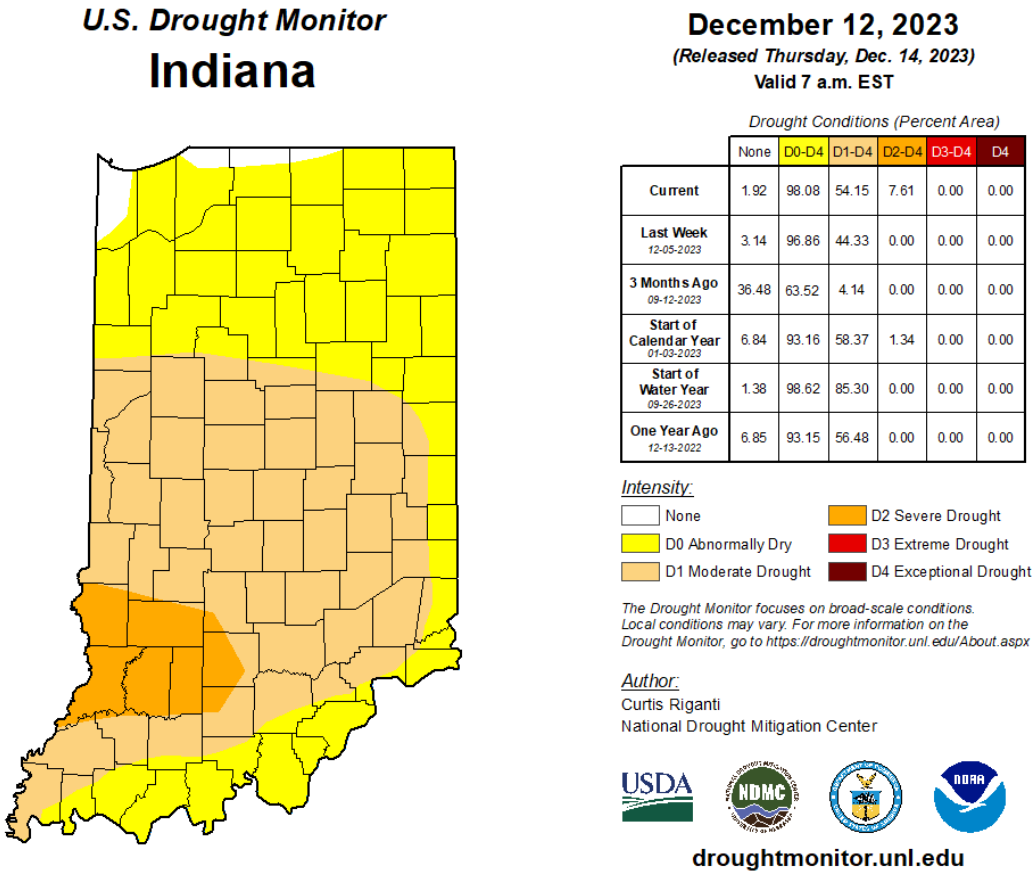
What is in store for winter? Conservation Agronomist and Indiana State Climate Office affiliate, Hans Schmitz, provided a winter 2023 outlook on behalf of the Indiana State Climate Office *"El Nino Signals Warm, Dry Winter"*.

Read the Article

Drought Can Happen in Winter - Zero Reports are Still Important
Adapted from Steve Hilberg

As you read in the Fall 2023 Climate Summary, drought has been an off-and-on issue in 2023. The release of the December 12, 2023 US Drought Monitor highlighted over 98 percent of the state in either abnormally dry (D0), moderate drought (D1), or severe drought (D2) conditions (below). Recent rains have helped soils recover slightly, but hydrologic impacts linger and can be seen in low water levels and reduced streamflows across the state. The winter outlook calls for

warm and dry conditions, which promotes continued drought through the winter.



Your CoCoRaHS observations are important pieces of information for those monitoring the drought. That's why every observation from every observer is important, including the zero reports - especially the zero reports. When your data is complete for the month, those using precipitation data can be confident that they are getting the entire picture for that station and location. The climatologists and hydrologists monitoring drought are usually using accumulated data - for a week, a month or longer. If there is missing data for a station in those periods, then the confidence in the totals is low. Generally, if more than 10 percent of data is missing, the totals aren't used - that's one day a week, 3 days a month, etc.

Be a hero - reports your zeros!

Condition Monitoring During the Winter
By Steve Hilberg

Just because it's cold outside doesn't mean that Condition Monitoring reports aren't important. Condition Monitoring reports are valuable year 'round, but, you may ask, what do you report in the winter when everything is dormant and the ground is frozen? Keep in mind that conditions during the winter - frozen ground, precipitation, snow cover - can have a significant impact on winter and spring flooding, spring planting, etc. Having a continuous record of weekly reports helps those monitoring for flooding, drought, and other impacts. During the winter you can focus on total precipitation (running below, at, or above normal), snow that has fallen, the character of the snow cover on the ground (i.e patchy, deep, icy, high water content, etc). You can also note any particular impacts from winter weather such as flooding, tree damage and other damage from ice accumulation, and the effects of rain and snow on the environment. It's not just what's happening in your yard, but in the general area, so a good practice could be to use a nearby

ditch, pond or anything else where water normally exists. Using the same indicator as a 'marker' each week you can assess the situation to indicate any changes. We still recommend weekly reports, even though one week can look much the same as the last. It's easier to notice changes if you are reporting each week, as then you tend to be more "tuned in" what has been going on.

Snow Water Equivalent (SWE) is NOT Your Gauge Catch
By Steve Hilberg

We find that many observers melt the snow in their rain gauge, report it as the Gauge Catch (correct), but then copy it into the New Snowfall SWE field on the report, thinking that they must be the same. They are not! This is a common error among many of our volunteers, but we are doing our best to get everyone out of the habit of re-entering their Gauge Catch into the Snowfall SWE field. These are separate physical measurements, and we do not want volunteers entering SWE unless they take a core from the snowboard or other flat surface, and then melt and measure it.

Our **Glossary of Terms** defines the 24-hour New Snow Water Equivalent as follows: The amount of water measured from melting a core of snow obtained from the snow on the ground at the depth of the 24-hour snowfall, measured to the nearest hundredth (0.01) of an inch.

The Gauge Catch and the Snowfall SWE are often not the same value, even if the precipitation is all snow. An entry should be made in the Snowfall SWE field only if you take a snow core from your board or other flat surface, melt the core, and measure it. If you do not make an actual Snowfall SWE measurement from a snow core, please leave the Snowfall SWE value as NA.

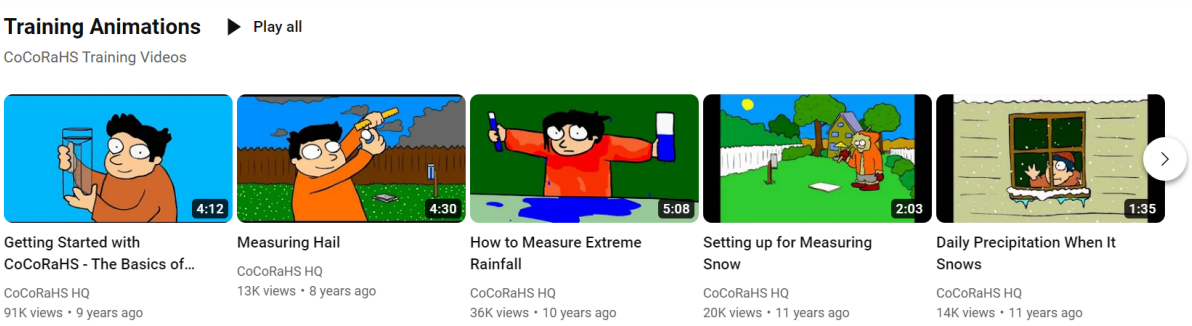
If your measured Gauge Catch and measured 24-hour New Snowfall Water Equivalent do happen to be the same, please include a comment with your observation along the lines of "Gauge catch and new snow SWE are the same".

Winter Precipitation Measurement Training Videos... In case you missed it!
By Steve Hilberg

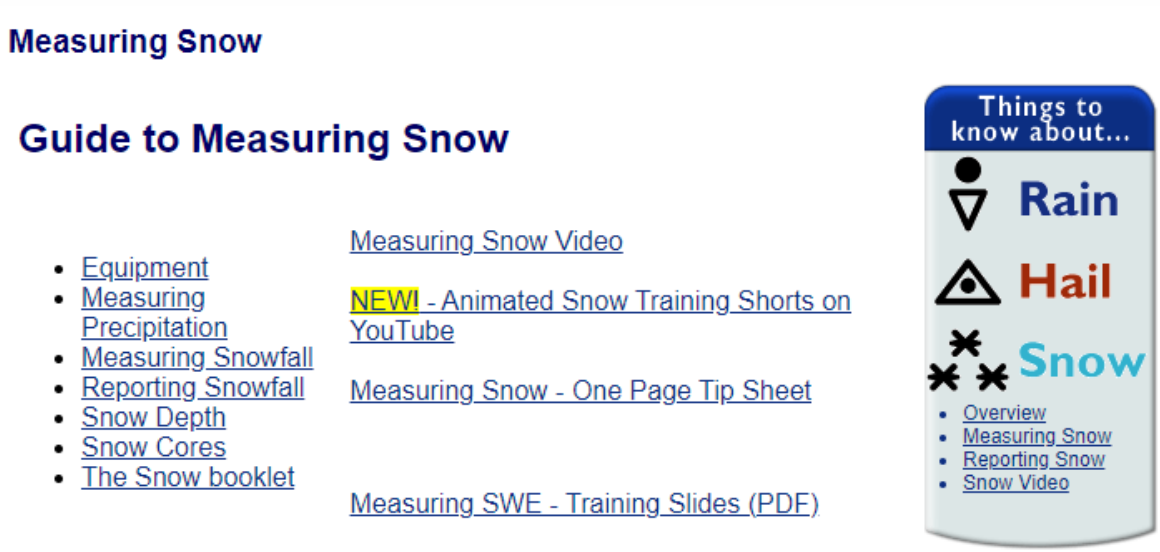
Remember to remove your inner measuring tube and funnel from your rain gauge prior to any event that may be followed by freezing weather. This is also a good time to check both the inner tube and outer cylinder for leaks. If rain accumulates in the inner tube and freezes it could cause the tube to crack. Snow and other frozen precipitation do not pass through the funnel. It is usually easier to just leave the funnel and inner tube out the entire winter and not risk getting caught with them out in freezing weather. This does require you to pour any liquid precipitation from the outer tube into the inner tube to measure, similar to when you are measuring amounts more than an inch. Many observers find that having an extra outer cylinder is very handy not only during the winter, but also in the warm season. It's easy to swap out cylinders and bring one in for melting and measuring, even if it is still snowing.

If you will be measuring and reporting the depth of new snow it's a good idea to have a snowboard. You can make your own snowboard by cutting a piece of 1/2" to 3/4" plywood to a 16' X 24" rectangle (you can make it a little larger if you wish) and then painting it white. Place the snowboard by your rain gauge or in an area that is not subject to drifting. Be sure to mark it with a flag or a driveway reflector so you can locate it once snow has fallen.

This is a perfect time to review winter precipitation measurement procedures. One of the easiest and entertaining ways to do this is view the series of short training videos available on the **CoCoRaHS YouTube channel**.



We also wanted to draw your attention to the CoCoRaHS Guide to Measuring Snow. There are various resources on this page to have you prepared for the 2023-24 winter season.



Equipment

1. The 4" diameter rain gauges that we use for CoCoRaHS can be used for measuring the water content of snow. However, **you must remove the inner measuring cylinder and funnel** for measurements of snow water content and other freezing/frozen precip. The inner tube can easily crack and break if moisture collects and then freezes. But keep the funnel and measurement tube handy indoors —you'll need it.
2. Have a ruler or yardstick ready (ideally one that measures in inches & tenths).
3. You should have a snow board (a flat board, **painted white**, ideally about 16" x 16"). They come in very handy for measuring snowfall. If not, that's OK, but you will need to identify a good representative location that is as flat and level as possible where snow accumulates uniformly and does not melt prematurely. Wooden decks are OK, but they should be at least 20-30 feet away from your house since your house will affect snow accumulation patterns.
4. You may need to have warm water handy.

If You Move, or Change Your Email Address

If you are moving to a new home and want to continue to participate in CoCoRaHS, please let us know as soon as possible. Your observations are tied to a specific location, so we don't want observations from your new location associated with your previous location. The value of the

observations are increased by their continuity at a location, so consider suggesting to the buyer or new tenant of your home that they participate in CoCoRaHS! We have a brochure that you can download, print and give to them.

When you know your new address, let us know. When you are ready, we will close your old station and open a new station at your new address (DO NOT sign up for CoCoRaHS again). Once that's done, you can enter observations from your new location. If you are moving to a different state, we can help you get in touch with that state coordinator so you can get started there.

Let us know if you change your email address so that your record is up to date. You can update your email address in the CoCoRaHS database yourself by logging in and clicking on My Account in the top line menu. Click on Edit in the My Information box. Make any corrections, then click save.

Please also send a message to in-sco@purdue.edu with the email change as well so we can update your address on our newsletter mailing list. This list is maintained separately from the main CoCoRaHS database.

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