



The trend section in the graphic above provides a comparison between the current month's data and that of the previous calendar month. A change in the statistic of 5 or more is required for a trend arrow to be displayed as either up or down. If the change is less than 5, a white dash is used to indicate that the data remained relatively similar to the previous month.

Coordinator Update
Andrew White, NWS Indianapolis

As we near the end of the year, we'd like to thank everyone for another great year for Indiana CoCoRaHS. We've had a lot of growth in daily observers and observations, with the highest number of 500 report days ever and almost every day seeing at least 400 reports for the state. We'd love to continue this growth into the new year and shoot for our first 600 report day!

We've been seeing an uptick in snowpack depth reports not being rounded to the nearest half-inch. Please make sure that you're following the rounding guidelines in blue while issuing your reports to ensure that the data we're sending out is accurate and usable by the scientific community.

We'd also like to recognize the seven new Indiana observers (Clay, Grant, Hancock, Marion, Montgomery, Tippecanoe, and Vigo Counties) who joined CoCoRaHS last month. Thanks for joining the team!

Indiana's Precipitation Report
Austin Pearson, Indiana State Climate Office

November experienced significantly above-normal temperatures in most areas, except for the

last week as we experienced a cold snap. Indiana recorded its 11th warmest November since 1895. In terms of precipitation, the statewide total was 4.03 inches, which was 0.65 inches above normal, equating to 119 percent of normal. However, precipitation levels varied greatly across the state; southern Indiana received over 8 inches, while northeastern Indiana saw less than 2.5 inches (Figure 1). CoCoRaHS adds a lot of value to the precipitation resolution across the state, which is also clearly visible in Figure 1. The NWS COOP ONLY map does not depict some of the heaviest precipitation areas in southwestern Indiana.

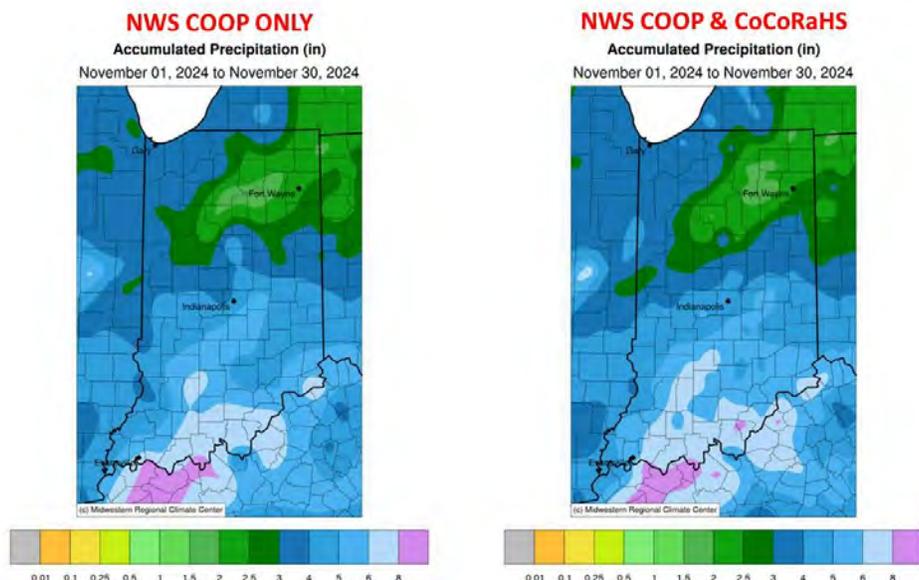


Figure 1: Left - November 2024 accumulated precipitation from NWS COOP network only. Right - November 2024 accumulated precipitation including both NWS COOP and CoCoRaHS.

Precipitation in southern Indiana was significantly above normal, with some areas receiving more than 3 inches over the typical amount (Figure 2). This increase in rainfall helped alleviate concerns about the potential for drought conditions to return to southern Indiana. In contrast, while northern Indiana also experienced some beneficial precipitation, the amounts were lighter and slightly below normal for this time of year, resulting in minimal impact on the overall drought situation.

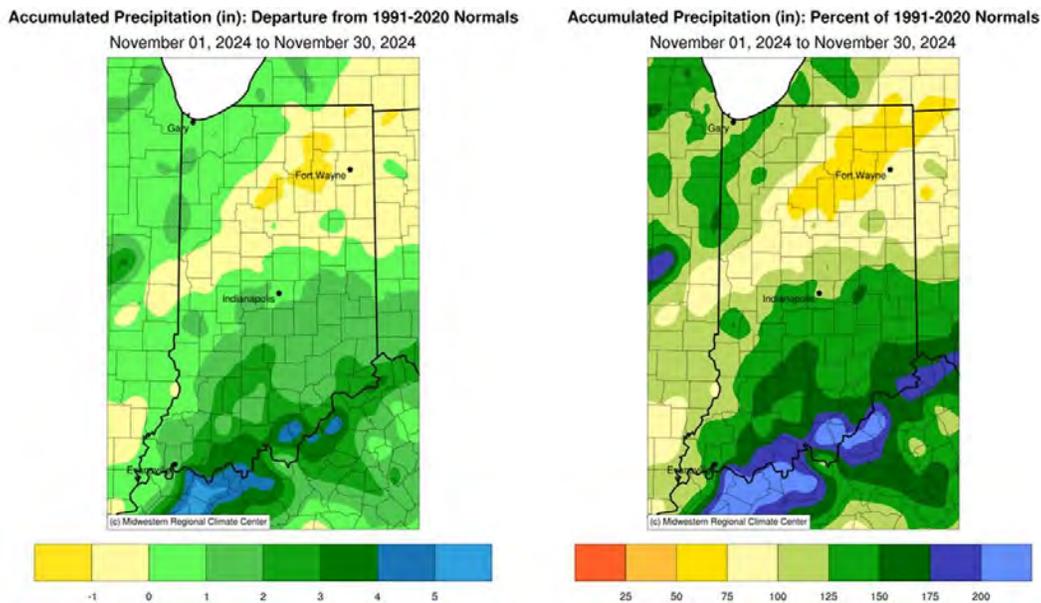


Figure 2: Left - November 2024 accumulated precipitation represented as the departure from the 1991-2020 climatological normal. Right - November 2024 accumulated precipitation represented as the percent of the 1991-2020 climatological normal.

Snowfall returned in November, with parts of central and northwestern Indiana receiving between 2 to 5 inches of snow (Figure 3). Areas that typically experience less lake effect snowfall were 1 to 4 inches above normal for the month, while far northern Indiana saw snowfall totals 2 to 4 inches below normal.

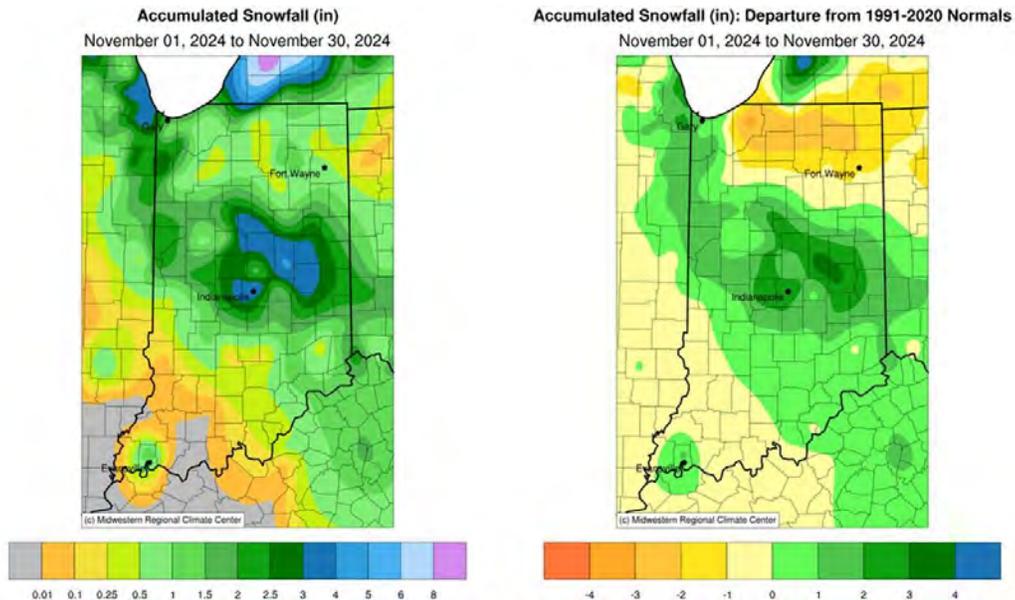


Figure 3: Left - November 2024 accumulated snowfall. Right - November 2024 accumulated snowfall represented as the departure from the 1991-2020 climatological normal.

As of December 17, 2024, the U.S. Drought Monitor reported that nearly 50 percent of the state remains in drought conditions. Moderate drought (D1) and severe drought (D2) have persisted throughout most of the fall due to significant precipitation shortfalls. While near-normal precipitation has occurred, it has not alleviated drought concerns, and many weeks of above-normal precipitation will be necessary to recover fully. Most vegetation is currently dormant, making drought indicators less visible. However, levels in ponds, creeks, and rivers are clear indicators at this time of year, and all of these continue to be well below normal levels.

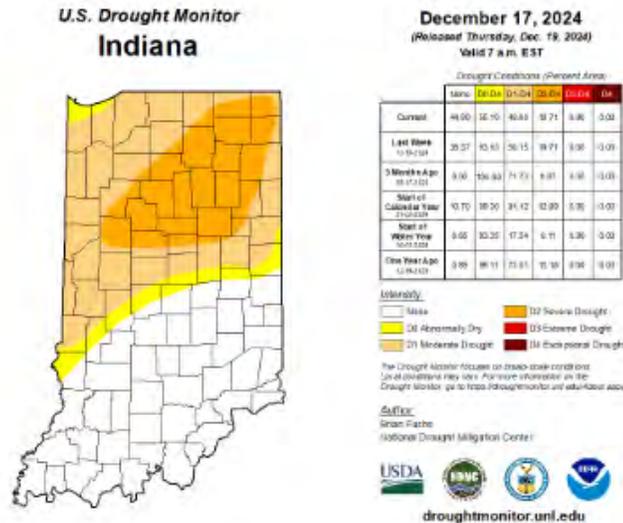


Figure 4: December 17, 2024 US Drought Monitor Map.



Stations considered had 100% daily precipitation reports.



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Cold Blast to Start December Begg the Question: What's Next this winter?
Kyle Brown, Meteorologist, National Weather Service Northern Indiana

If this were March, we'd declare that spring is "in like a lion!" amid arctic air to begin December, I'll make the same declaration for the start of this (meteorological) winter season. Through the first seven days of December, the average temperature at Indiana's official climate stations ranges from nearly 12°F below normal at Indianapolis to about 7°F below normal at South Bend. This is the coldest start to December in 14 years at both of these stations. Folks are naturally curious about what the rest of the winter might have in store.

This weekend, temperatures are expected to be cooler. However, we can look forward to a warmup after the weekend. There is a high level of confidence that above-normal temperatures will arrive in time for the holidays. Additionally, we can expect above-normal precipitation during this period.

Beyond this, the national Climate Prediction Center continues to forecast (weak) La Niña

conditions to emerge. Due to the modest conditions, other teleconnections (e.g., Madden-Julian Oscillation) will play a key role in our weather patterns this winter. Sea surface temperature anomalies have transitioned toward near-to-below normal over the past several weeks, a step in the right direction for La Niña. The CPC's winter outlook reflects typical La Niña impacts to Indiana (Figure). Confidence in the temperature outlook is low for most of the state, but stronger signals indicate above-normal precipitation, which is a positive sign for ongoing drought conditions in northern Indiana.

Lastly, history generally favors above-normal snowfall from north to south across the state during La Niña. The correlation is weaker toward the Ohio River. Of course, the same stipulations apply here; shorter-range variables will be at play in the months ahead.

Lion versus lamb to conclude winter is senseless to forecast this early. For some, the optimism of sun and warmer temperatures at the end of a dreary winter is enough to anticipate winter's end as, "out like a lamb." The rest of us, anecdotally, know that snowflakes can fly well into March.

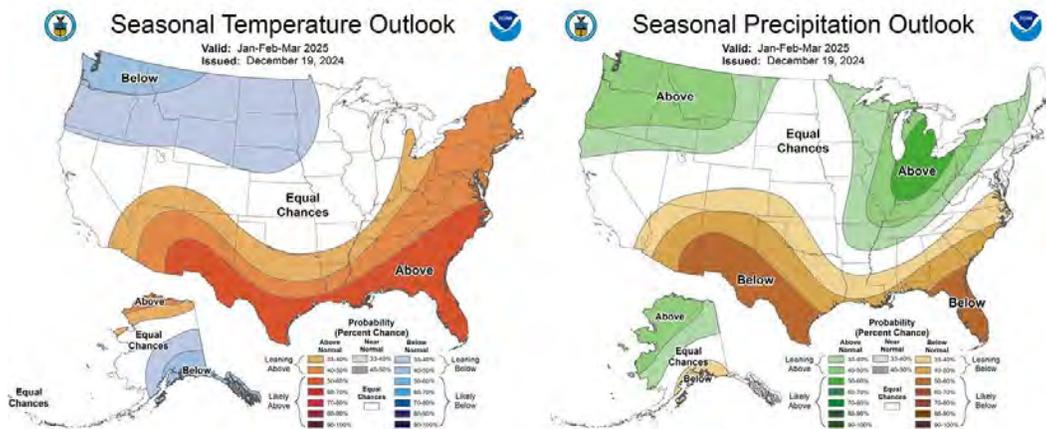


Figure: (left) The CPC's January, February, March seasonal temperature outlook. (Right) The CPC's January, February, March seasonal precipitation outlook.

When to Measure New Snow
Steve Hilberg, CoCoRaHS

Perhaps one of the most important considerations measuring new snowfall is WHEN to measure new snow. Unlike rain, which stays in your gauge (or should stay in your gauge) until it is measured, new snowfall can come and go in between your regular observations. That particular characteristic requires a different approach to measuring.

The definition of 24-hour new snowfall provides the general information on when to measure new snow. "24-hr snowfall is the maximum accumulation of new snow and ice in the past 24 hours, prior to melting or settling." So, "prior to melting and settling" is the first clue that this may not be at your regular observation time.

Measure new snowfall as soon as possible after it ends, before settling and melting occur. This often will not be at your regular observation time. It might be at 2:00 p.m., or 6:00 p.m., or at 1:00 a.m. No matter what time it is, report the new snowfall at your regular observation time. You can submit a Significant Weather Report with the amount you measured, but you still need to include it in your next regular observation.

Here is a graphic that demonstrates how to measure snow in this situation.



Note that the maximum snowfall is much more than the snow remaining on the ground at 7:00 a.m. the next day

The first question that is often asked is something along the lines of "I am at work during the day and am not home to measure the snow when it ends" or "What if the snow stops overnight while I am asleep?" Good questions!

If you are not at home during the day when the snow stops, measure the new snowfall as soon as possible after you return home. Write that down for your report the next morning. The snow remaining on the ground in the morning is your snowpack depth. When you submit your observation the next day, please include additional information in your comments, such as "I was away during the day when the snow stopped - snow measured at 6:00 p.m. Temperatures hovering around freezing and some melting may have occurred before measurement", or any information that will help us interpret your observation.

If snow stops overnight while you are sleeping, the best you can usually do is report what you measure in the morning. [I have been known to go out and measure snow at 3:00 a.m., but that's me]. Again, any additional information you can add to your observation notes will be helpful.

What if you have more than one snow event in a 24-hour period. This graphic demonstrates how to handle that.



Remember, the goal is to capture the maximum accumulation in a 24-hr period, and that means you may have to measure snow before your observation time.

If you haven't done so already, please review our [Winter Precipitation Measurements](#) training on the web site.

Condition Monitoring for the Winter *By Steve Hilberg, CoCoRaHS*

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.

If You Move, or Change Your Email Address

If you're moving to a new home and want to keep participating in CoCoRaHS, please let us know as soon as possible. Your observations are tied to a specific location, so we want to make sure that your new observations are correctly associated with your new address. Observations are most valuable when they are consistent at one location, so you might also suggest to the new owner or tenant of your current home that they consider joining CoCoRaHS. We have a [brochure](#) available for download, print, and distribution.



Once you have your new address, inform [us](#) so we can close your old station and set up a new one at your new location. Please avoid signing up for CoCoRaHS again yourself. Once we've set up your new station, you can start entering observations from your new location. If you're moving to a different state, we can

connect you with the state coordinator there to help you get started.

If you change your email address, please update your record in the CoCoRaHS database by logging in, selecting "My Account" from the top menu, and clicking "Edit" in the "My Information" section. Make your updates and click "Save."

Also, send a quick message to in-sco@purdue.edu with your new email address so we can update our newsletter mailing list, which is maintained separately from the main CoCoRaHS database.

CoCoRaHS Newsletter Archive

If you are interested in viewing past issues of The Hoosier Observer, visit the [Newsletter Archive](#) located on the Indiana State Climate Office Website.



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