

CoCoRaHS Newsletter Summer 2022

Peter Goble - Colorado CoCoRaHS Coordinator



Hello everyone, and thanks again for participating in CoCoRaHS. For those who may not know me, I am Peter, your state coordinator. What does that mean? It means if you have CoCoRaHS-related questions please feel free to seek me out. If you have any questions about how to report, how to sign up a friend, data quality issues/concerns, or are wondering what else you can do to help, let's get in touch.

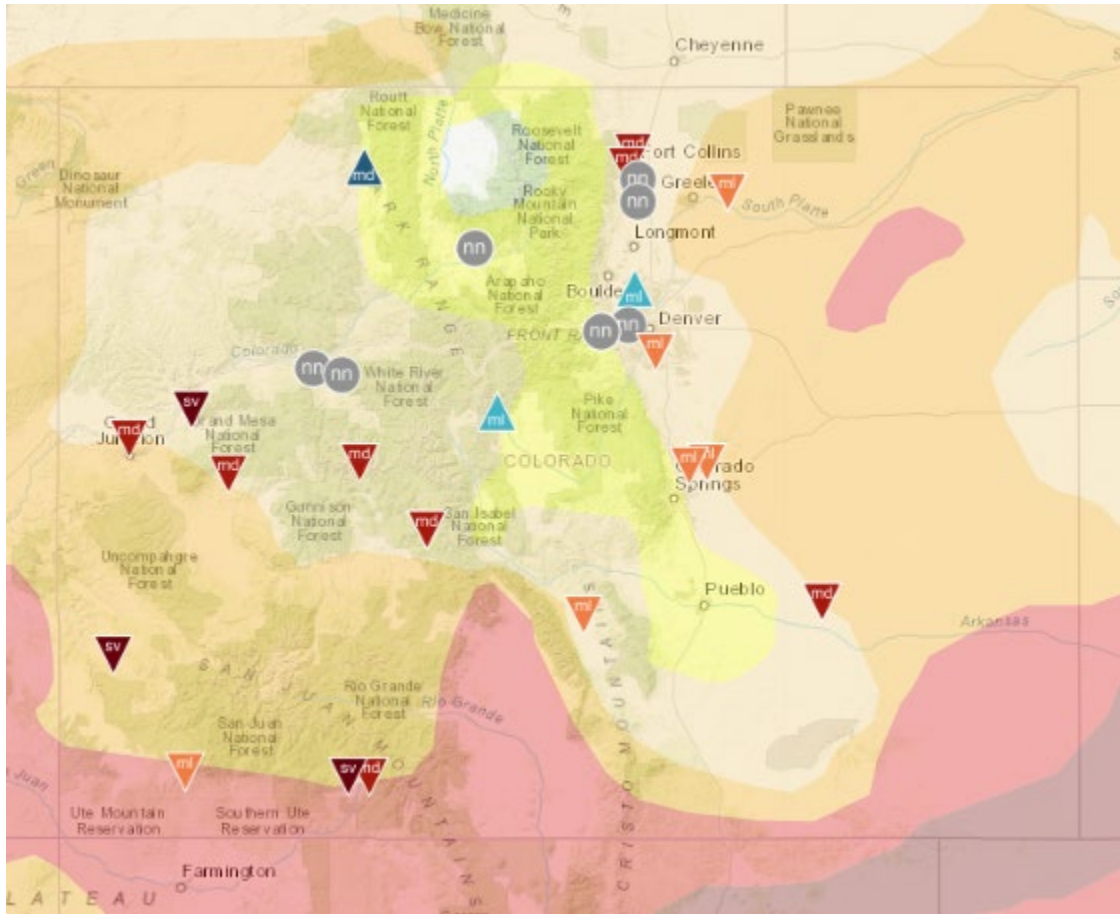
A snow photo for summer? Why not? It was taken just last week near Silverthorne.

Colorado CoCoRaHS and Condition Monitoring: I usually wait until midsummer to send out my summer newsletter. This year I wanted to piggyback off a couple of things Nolan wrote in his latest edition of "the catch."

First off, congratulations. CoCoRaHS continues to grow both nationwide and here in Colorado. There are now over 25,000 active observers across the nation, and about 1,500 of them are here in Colorado. Part of the reason CoCoRaHS continues to grow in Colorado is because every now and then somebody who has been inactive for five, ten, or even fifteen years dusts off the rain gauge and starts reporting again. We are so thankful! These numbers, in Colorado, made the difference between growing and shrinking last year.

Secondly, Nolan mentioned the importance of "Condition Monitoring Reports." If you live on the west slope you have heard from me at least once about Condition Monitoring Reports, and I am thankful to

every one of you who made a submission. The Condition Monitoring reporting option allows CoCoRaHS observers to give an anecdotal appraisal of conditions in their area. The comments from these reports have been helpful for us in “telling the story” of drought (or wet conditions). Not only that, our Condition Monitoring Reports used by the US Drought Monitor to document impacts associated with drought. These reports go to good use, and I think if more people understood how valuable they are they would be more popular. Our Condition Monitoring map is looking lively and colorful, but I can’t help but wonder what our map would look like if even one of every five regular CoCoRaHS observers filed a Condition Monitoring Report once/week.

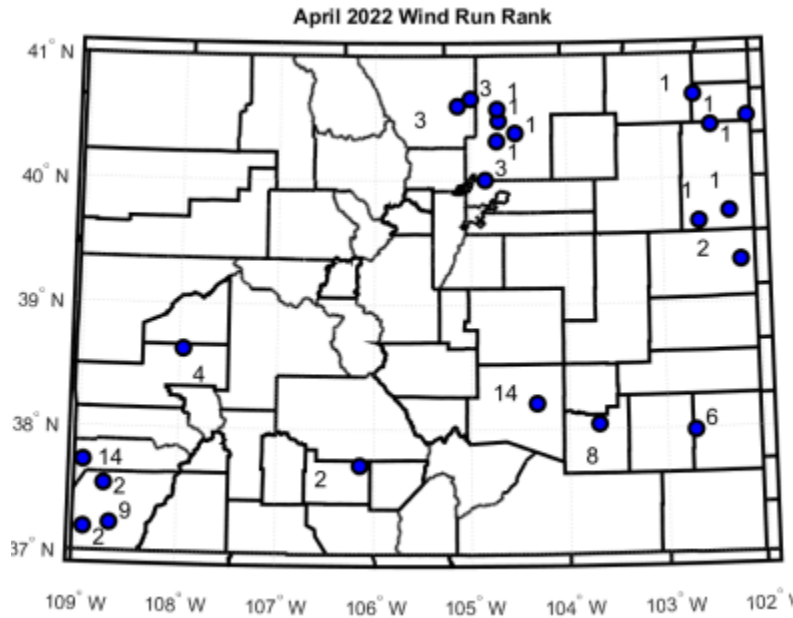


Colorado CoCoRaHS Condition Monitoring Map 6/2/2022

We have found that many folks don’t mind filing these reports, but they are not as habit-forming as checking the gauge each morning. My plan for the next 12 weeks or so is to send biweekly reminders to folks to file a Condition Monitoring Report on a rotating basis, and see how much that helps data collection. Please know this is not a requirement to participate in CoCoRaHS. I won’t be at all offended if you simply delete the emails, but for those with good intentions of filing a report, a gentle reminder can be helpful.

What was with all that wind?!? April winds were relentless this year. The Denver International Airport measured its windiest month on record. This was not an isolated incident. We looked at wind statistics from our Colorado Agricultural Meteorological Network (CoAgMET) stations that have been around

since the 1990s. The northeast quadrant of the state had its windiest April on record. Windy conditions continued well into May too.

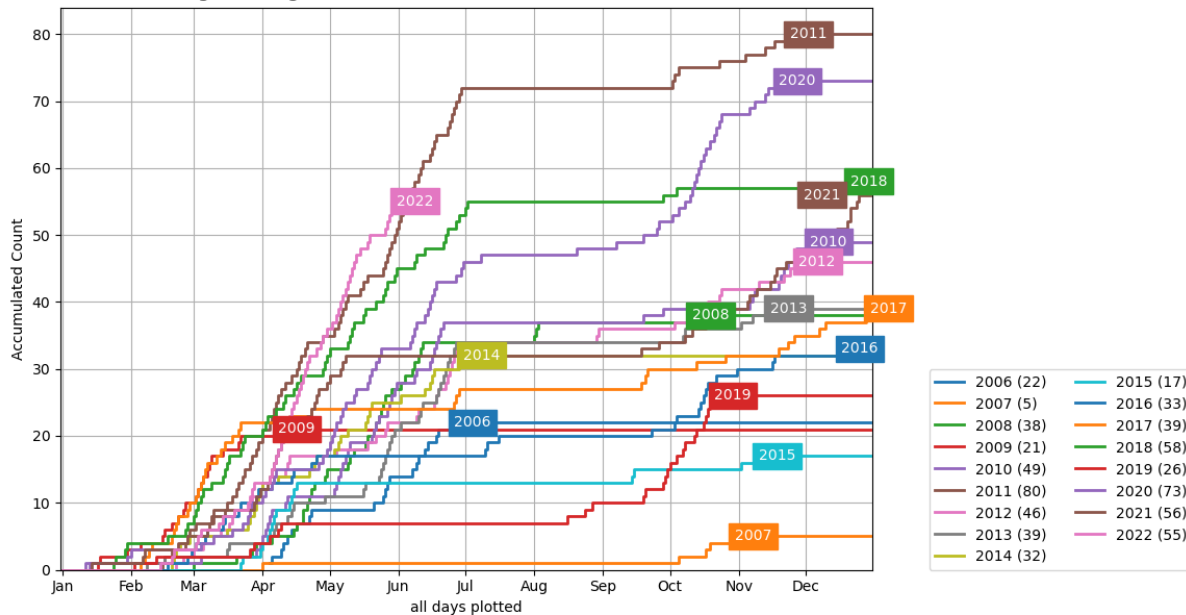


April 2022 average monthly wind speed ranks from CoAgMET stations with at least 20 years of record.

For the most part, these windy events were accompanied by dry weather. Dry and windy conditions together mean fire weather. April was much drier than normal for Colorado. The number of dry and windy days we experienced yielded a record number of “Red Flag Warning” days for the National Weather Service offices in Boulder and Pueblo. Grand Junction was near record totals. I have attached a plot of Pueblo’s statistics below.



NWS WFO: Pueblo (PUB)
Red Flag Warning Count



Generated at 2 Jun 2022 12:30 PM CDT in 1.28s

IEM Autoplot App #44

Red flag warnings issued by NWS (National Weather Service) Pueblo over a calendar year (2006-2022).

How did we end up with a record windy month? Do windy and dry conditions typically go together? Are we seeing a trend towards windy conditions? Let's investigate

The first piece to explaining our windy month is seasonality. April is the windiest month on average statewide. During April, the high latitudes of Canada, Russia, and northern Europe remain cold. The subtropics and low latitudes get warm. This temperature difference, or gradient, strengthens the polar jet stream, leading to active weather.

Dry and windy conditions do not always go together. Our wet spring storms are often accompanied by high winds. Weather this spring was quite windy and active across the central US, but the storms consistently missed us to the north. When storms miss Colorado to the north, eastern Colorado is subjected to dry, windy air that screams down the leeward side of the Rocky Mountains. Spring storms missing to our north is a calling card of La Niña. I don't have space to go into details on the "why" here, but La Niña conditions bump the polar jet stream northward. We see more dry, windy spring days during La Niña springs. Look at the Pueblo red flag warning graphic above: the three springs with the most red flag warnings, 2022, 2011, and 2018, were all La Niña years.

Is it getting windier? We have major limitations when it comes to assessing wind in a climatological context. To observe daily maximum and minimum temperatures, as well as precipitation, you only need a person to check a weather station once/day. For this reason, some of our temperature and precipitation records go back nearly 150 years. Wind is different: You cannot measure things like wind gusts, sustained winds, or even daily average wind speed without a sensor providing constant input. So our wind datasets are, at best, 50-60 years old. Most wind datasets are much younger still. The National Weather Service did not start issuing Red Flag Warnings until 2006. It is important to remember that the

graphics I shared above are in their climatological youth, and much like me, have no memory of the fabled windy springs of the 1970s.

The evidence we have, which is limited, does not point to a trend in winds across Colorado. Global climate models, which simulate changes in weather patterns under varying future warming scenarios, offer limited information about how wind across our state may change. If anything, they lean towards marginally a less windy future. If the arctic and high latitudes warm faster than the subtropics and low latitudes as predicted (which is likely), that could weaken the polar jet stream. A weaker jet stream could mean weaker, or less frequent wind events for Colorado. However, a slight shift in the average positioning of the jet stream could at least partially offset a trend driven by a weakened jet stream. The future of windy weather in our state remains an open question. I would expect our springs to stay windy.

Our Water and Our Responsibilities: Many of you across the Denver Metro area reported 1.00-1.50" of rainfall on June 1st. Even though much of this fell before midnight on May 31st, it will count towards your June totals. The Denver Central Park weather station's normal accumulation for the month of June is 1.68", so many of you received over 80% of your normal June rain on day one. One observer in Idaho Springs woke to 16.8" of snowfall. What a way to start climatological summer!

The other night I spoke with a reporter from CBS about the recent rain event on the Front Range. She was strangely persistent in asking me about flooding concerns. Sometimes it seems like people look for a reason to panic in response to every weather event, but the recent rain on the Front Range was decidedly a good thing. We need the moisture.

Not everyone in the state benefitted from a steady soaker this week, and one storm like that does not reverse a long-term drought. Colorado is predicted, with high confidence, to have well below normal streamflows again this year. Peak snowpack levels, soil conditions, and the runoff we have seen so far all justify such a forecast. Water rights have always been a point of contention in Colorado. With the western US's growing population, and projections for a warmer future, there is no doubt things will stay interesting. Our great western Reservoirs continue to shrink. The Colorado Compact is under stress to say the least. Nebraska is digging up 100-year-old agreements to flex their water right muscles. Let's use water wisely this summer. Some tips: get any leaks fixed, don't water during the day, turn your sprinklers off for a few days after a good storm, and use your rain gauge measurements to help you decide when you can skip days.

Thanks as always,

Peter